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THE

# Dental Summary

EDITED BY
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COLUMBUS, OHIO

VOL. XXIII

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THE DENTAL SUMMARY

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# CONTRIBUTIONS.

## SOME SUGGESTIONS TO BEGINNERS IN THE WORKING OF PORCELAIN.

BY LEVITT E. CUSTER, B. S., D. D. S., DAYTON, OHIO.

The first condition to be observed in porcelain work is cleanliness. This does not mean ordinary cleanliness, but it means that every step and detail in porcelain work is to be carried on with the utmost care. The presence of any foreign particles in the porcelain will cause the same when fused to be either porous or discolored. Sometimes both conditions may be present. A particle of plaster will cause porosity, and a metal filing will cause a black spot in the finished piece. Even the water which is used for mixing the material should be distilled to insure against the presence of lime or organic matter.

### PORCELAINS.

The porcelains that are upon the market for this work are:

Tooth Carving Bodies.
Allen Continuous Gum.
Close Continuous Gum.
High Fusing. Tees' Continuous Gum.
Consolidated Contiuous Gum.
Brewster Crown, Bridge and Inlay.
White Crown, Bridge and Inlay.
Whiteley Crown, Bridge and Inlay.

| | |
|---|---|
| Low Fusing. | Ash Crown, Bridge and Inlay.<br>Downey Crown, Bridge and Inlay.<br>Jenkins' Inlay. |

These bodies have been arranged somewhat in the order of their fusing point: the tooth-carving bodies at one extreme and the inlay at the other. The particular purpose for which each is best suited is also to be seen. It is the practice to designate the white porcelains as "body" and the pink colored porcelains as "gum enamel." They not only differ in color, but the gum enamel fuses at a lower temperature than the body with which it is to be used.

The body and gum enamel are each put upon the market in powder form ready for use and require only to be mixed with water and fused.

### MANIPULATION.

The porcelain is prepared by mixing the powder with water into a thick paste This puts it in form to be applied with a spatula and moulded. Small porcelain or glass dishes are best suited for the work. The author uses an ounce ointment glass jar with a shallow glass lid. The jar is the receptacle for the powder, and the lid, when removed, makes a convenient cup in which to mix the porcelain. In this manner there is no waste and the porcelain can always be kept free from dust. A full set of these, properly labeled, will be found to be a great convenience. The porcelain, having been mixed to a thick paste, is to be applied with a spatula. The most convenient forms for this work are to be found among the plastic filling instruments. In continuous gum work, or cases which require an even layer of porcelain, the best method is to apply a small amount at a time, gradually covering the plate as one would sod a yard. As each spatula of porcelain is placed in position, the piece is gently tapped, and when the moisture appears it is taken up. The tapping is for the purpose of settling the particles as closely together as possible. The author has found that when all the moisture has been taken up in this manner, that if fresh water is added with a camel's hair brush and is again taken up in the above manner, that denser porcelain will thus be obtained. The sand on the sea shore becomes a hard bed by the repeated settling following the tidal movements of the water. The density of dental porcelain depends largely upon the time and care expended in the repeated tapping and removal of the water.

While ordinarily three bakings are necessary to complete a case of continuous gum, the author has frequently been able to complete in two bakings, due to the care and thoroughness exercised in condensing the porcelain.

While it is easier to apply the porcelain with a spatula there are parts of the work that can best be done by the use of a fine camel's hair brush. This is especially true when shaping the porcelain around the teeth.

The porcelain having been applied, the teeth should be carefully cleaned of the fine particles that have adhered to their surface. This is best done with another fine brush which is used for no other purpose. The case is now ready for the fusing.

### FUSING.

This important step can be accomplished in the oil and gasoline appliances now upon the market, but with more certainty and ease in the electric oven. While the electric oven will only be considered in this article in detail, the general principles also prevail when other sources of heat are employed.

The electric oven possesses the following advantages and disadvantages:

| | |
|---|---|
| Advantages. | Purity of Heat.<br>Range of Heat.<br>Ease of Control.<br>Ease of Observing the Fusing Process with the Arc-light.<br>Cleanliness.<br>Absence of Noise and Odor.<br>Economy of Time and Expense. |
| Disadvantages. | Necessity of Commercial Current.<br>Danger of Overheating.<br>Burn Out, if Neglected. |

The author, having placed the first electric oven upon the market, after eight years of careful study and experiments presents the following as the conditions which produce the best electric oven, both as to degree of heat and length of service:

*First*—Wires of purest platinum embedded in the inner wall of the oven, flush with the surface.

*Second*—All the walls covered with wires as closely arranged as safety from buckling permits.

*Third*—Wires arranged in increasing distance apart as center of oven is approached (to produce an even heat).

*Fourth*—On the direct current, negative end of wire should be one-fifth larger cross-section than the positive end.

*Fifth*—Form of oven cavity should conform with object treated, both for economy and even distribution of heat.

A rheostat should always be employed with the electric oven. This not only saves current, but places the oven under the complete control of the operator. While small pieces can be fused with safety in ten minutes, full cases should not be fused in less than thirty minutes, beginning with a cold oven. This can only be done by using a rheostat in series with the oven. Moreover, much time can be saved the operator. From time to time the lever is pushed forward till the third from the last button is reached, where it is allowed to remain until the operator can give the case his undivided attention. The porcelain is just ready to drop into a fuse, and when the lever is turned to the last button the porcelain should be watched by means of the arc light till a satisfactory degree of heat is attained. This only requires two or three minutes of the operator's time, and yet he is present at the critical period of the fusing process.

The piece having been fused, the current should be turned off and all allowed to cool down together. In no case should the piece be removed to a cooling muffle, for the oven itself makes the best annealing oven. The longer the time the piece is given to cool, the better will be the temper. The first baking and cooling of continuous gum can be quickly done, but the last should not be so.

### CONTINUOUS GUM.

In continuous gum work platinum is used as the base upon which a veneer of porcelain is fused. The platinum here serves the same purpose that platinum does in the making of an inlay—it is the matrix. There is considerable difference in the thickness of platinum as employed by different operators. Dr. L. P. Haskell advises a thick plate, 24 to 27 gauge, for he believes the strength rests largely in the plate, while others advocate a thin plate, as thin as 32 gauge, believing that the strength lies chiefly in the porcelain and that the platinum only serves to give form to the porcelain. The author has used all gauges between these extremes and at the present time has seen no failures from lack of strength. The thin plate has the advantage of cheapness and ease of manipulation.

The plate having been swaged in the usual manner, the rim may be turned over or a No. 20 wire soldered thereon with Ames solder, gold eighty parts and platinum twenty parts. The base of the plate should have a strip of platinum plate one-fourth of an inch wide soldered from one side to the other, joining the wire of the rim. The inner edge is lifted from the plate about one-thirty-second of an inch. This wire and the strip of metal serves as a finish for the porcelain and the strip at the base of the plate also admits of the slight modification that is often required in the palatal region.

Being satisfied as to the fit of the plate, the next step is the arrangement of the teeth thereon. Special teeth known as "continuous gum" teeth are used for this purpose. These are attached to the plate by means of wax and tried in the mouth for articulation, and at the same time noting the requirements of wax to restore the contour.

The teeth are then firmly united to the plate with wax on the palatine aspect and that portion of wax on the outside is then carefully removed. The plate is then invested in plaster, two parts, and asbestos, one part, the investment covering all of the teeth except the part on the inside covered by wax. When hard, the wax is removed by a little heat. This leaves the necks of the teeth and pins exposed. The pins are then bent out straight and a band of platinum fitted under the pins, extending around from molars to molars. Sometimes two pieces may be used, provided they are allowed to overlap at their juncture. This band of metal is to support the teeth and also to strengthen the plate. The adaptation of this strip to the plate is facilitated if the lower edge is bent at a right angle and this portion slit with the shears. The pins of the teeth are now bent down upon the strip. If before using the teeth the ends of the long pins have been flattened with a hammer, their adaptation to the strip and plate will be much easier and closer. The case is now ready to be soldered.

Pure gold was formerly used for this purpose, but the heat necessary to fuse the porcelain would vaporize the gold, leaving a porosity over the pins. This trouble was remedied by Dr. W. V. B. Ames, who presented the solder before referred to. This solder does not vaporize at the heat required to melt the porcelain. In using it the Knapp blow-pipe may be necessary. It can also be melted if an ordinary blow-pipe is used with a strong blast. The placing of the solder upon the pin and its fusing is facilitated if a wire of platino-iridium is used in the manner of a soldering iron. This in the flame becoming hotter than the plate and quickly melts the solder, and it is then wiped along the pin and plate. A bit of solder having united each pin to the plate and also the supporting strips to the plate, the plate is allowed to cool.

When cool, the investment is carefully removed, and we are now ready for the application of the porcelain. The porcelain is prepared and applied in a layer about the thickness of pasteboard all over the plate. It is a good plan to chink in between the roots of the teeth with bits of broken teeth. This not only serves to keep the teeth in their positions, but saves material and the tendency to warp the plate by the shrinkage of a large amount of body. The first application of body should be of sufficient quantity to fairly represent the finished plate. This is cendensed as previously described and placed in the oven for fusing. The plate should be placed upon a platinum, or better, a platino-iridium, wire, bent in a V-shape with upturned ends, and an upright piece of the same length in the middle. This forms a tripod upon which the plate rests during the fusing.. The middle point supports the front of the plate, and the end wires the rear of the plate, thus distributing the weight more evenly than where an investment is used. Investments always shrink so much that the plate only bears at its middle point and a change of shape may occur.

The case is now ready for the first firing. The heat is gradually turned on by pushing the lever of the rheostat from button to button, allowing an interval of two to five minutes between each step. Sometimes, if the interval has been sufficiently long, the lever may be thrown over two or three buttons. In this manner the lever is pushed forward until the third from the last button is reached, where it is allowed to remain until the operator can give the case his undivided attention. It may remain here for quite a length of time without harm, and when he is at leisure he will find the case just ready to drop into a fuse. The lever is thrown on the last button and the case closely watched. The arc light is now brought into play, which facilitates the observation of the fusing process. The area which is illuminated by the light is carefully watched and when the surface presents a frosty appearance, but not quite a glazed surface, the proper heat is attained for the first fuse. The current is turned off and the case allowed to cool in the oven until it can be taken out by the hand. The oven itself makes a better annealing oven than a separate muffle for this purpose.

The plate will now present a rough and more or less fissured surface, according to the thoroughness in packing the porcelain. The second layer of body is now put on in the same manner as the first. This layer should fill all the fissures and restore the full contour which is desired in the end. Just over the roots of the teeth the body is built somewhat higher than between the roots and rugae are represented on the palatine aspect of the plate. The case is now ready for the second fusing. This should be carried on just as was done in the first, except that here the body was brought to a full glaze. The first baking should have been enough to produce all the shrinkage that occurs, and the second should be sufficient to thoroughly glaze the surface. Under the arc light the fusing process will present several stages. The first is the frosty appearance of the first fusing, where the shrinkage has taken place and the particles have begun to coalesce; the second is the gradual coalescing of the separate particles, and the third is the full glazed appearance, at which point the heat should be turned off and the case allowed to cool as before. The operator should not expect to continue the glazed stage until the entire surface is smooth, for the porcelain would then be over-heated. If the area under the arc light presents a full glaze while the surface is still uneven, the proper heat has been attained.

The case is now ready for the gum enamel. This is applied in the same manner as the body. This layer is a little thicker on the rim than in the palate and should be applied with a small spatula, following the unequal surface over the roots and rugae. The plate should be gently tapped with a wooden instrument and the moisture taken up at frequent intervals, so as to insure perfect condensation without destroying the contour of this layer. When the case has been fused it will be found that the enamel has largely filled the depressions and is rather thin over the elevations of the body, and unless the surface of the body is represented in the gum, there will be simply streaks of light gum here and there where the body comes nearest the surface, without that natural appearance of pale gum over the prominences. If the gum has been applied in an uneven layer, following the rough surface of the body, the change that takes place when the gum enamel fuses is just sufficient to give a natural appearance to the root of the tooth.

The final fusing should be sufficient to bring the gum to a full glaze and yet not so high that the gum enamel spreads out like a sheet of glass. When the enamel has been fused the oven should be allowed to cool down till the plate presents a dull red appearance, and then the front stopper is inserted and the whole allowed to cool till the case can be taken out with the hand.

The writer has found it a good plan at times, in order to obtain the best appearance of the gum enamel, to bring the oven to a biscuit heat and then cool. The case is moistened with water and it will then fairly represent the finished plate, and places where the enamel is too thick or too thin can then be changed. The thick places are ground with carborundum and most carefully washed afterwards, and more gum enamel is added to the thin places. The utmost care must be observed that the carborundum stone is used under running water and that every particle of carborundum is washed off before fusing, otherwise black spots will appear if particles of carborundum remain. The case is finally finished by polishing the platinum rim and rear margin of the plate to a smooth finish with the porcelain.

## CROWNS AND BRIDGES.

In this work the principal point to be borne in mind is that *porcelain, to have strength must have bulk.* Thin veneers and facings will sooner or later give trouble. In most cases it is necessary to construct a skeleton of heavy platino-iridium wire or bars. This should of itself have strength enough to withstand the usage to which it will be subjected, without expecting much of the porcelain which is to be added later on. If platino-iridium is not at hand, soft platinum can be made hard enough to answer by fusing it with carbon electrodes. (OHIO DENTAL JOURNAL, 1894). The different parts should be united with Ames' solder.

While it might be desirable to take up crowns and bridges in detail, the great variety of these precludes such an attempt, but an illustration of the use of porcelain in each case will come within the limits of this paper. Porcelain has done much to supplant the use of conspicuous gold bands in crown work. It has been the practice of the author to make many porcelain crowns in the following manner: The root having been prepared by dressing the labial portion under the gum, the lingual aspect may be left a little longer. The remaining enamel is dressed off and a Logan crown is closely fitted to the labial portion, little attention being paid to the lingual part. A U-shaped band of 30-gauge platinum is fitted around the lingual two-thirds of the root. This brings the front ends about even with the anterior edge of the root. After being trimmed off so as to be flush with the ends of the root it is removed and placed upon a 32-gauge sheet of platinum and the two united with Ames' solder. Small holes are drilled in the cap portion and it is then returned to the tooth and carefully fitted to the end. The crown is then forced through the cap and to its seat. A little grinding may be necessary to compensate for the thickness of the platinum cap. The two are finally removed and thoroughly washed. We are now ready for the porcelain work. Close body which has been finely ground in a mortar is prepared in the usual manner, with water. A drop of the body is packed about the pin and the platinum cap is placed in its position and slowly forced to its seat, accompanied with gentle tapping of the tooth. If there is ample room for doing so, the band may be covered with a layer of porcelain. While a veneer is bad practice, in this case it can be used if it has some thickness where it becomes a part of the porcelain crown and is dressed to a thin edge at the margin of the band. If there is not sufficient room for some thickness of the veneer, it is then better to provide for dressing the band flush with the crown, allowing the same to be seen from the lingual view. If the band is not to be covered with porcelain, there should be ample body built out over the joint between the two to permit of shrinkage and for finish. Figure I.

Usually one baking is all this is necessary for this form of crown. Such a crown when set will be quite as strong as one having a complete band surrounding the root. The force in mastication comes from the back and the partial band being a part of the crown serves the purpose of a full band.

The use of porcelain in bridge work should be restricted to small pieces of two or three teeth, unless, as previously stated, there is room for a large body of material. Porcelain is especially suitable for anterior bridges in which anchorage is secured by the use of a dowel in the roots of the abutment teeth, and it is indicated in the posterior part of the mouth when there has been much loss of the alveolus and large and long teeth are

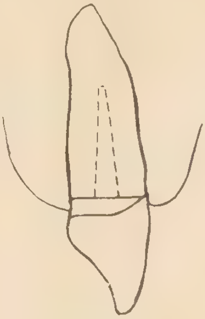

FIG. 1.

required to fill the space. In the latter case a solid piece of porcelain properly constructed is more beautiful and hygienic than any gold piece can possibly be.

In the case for the anterior teeth the anchorage is secured by a heavy U-shaped platino-iridium staple whose ends extend into the roots of the pier teeth. Partial caps are prepared, as previously described for crowns and the whole united with Ames' solder. Plate teeth with long pins are fitted and soldered to the horizontal part of the staple. After being thoroughly cleaned, finely ground Close or Brewster body is carefully packed about the teeth and metal frame work. It is then baked. Two bakings should suffice in this case, and if care has been exercised in condensing and good judgment as to quantity, a single fusing will complete the case.

In the case of the posterior teeth the anchorage crowns may be made of platinum to facilitate its construction, but the author prefers gold crowns constructed in the usual manner, and the bridge portion constructed independently and the two united with solder. The method is as follows: The gold crowns having been constructed and in place a plaster impression is taken and the crowns removed in the same. A cast of plaster and asbestos investment is poured and we now have the crowns as they were in the mouth. A thin strip of platinum from one-eighth to one-quarter of an inch wide is burnished on the ridge of the alveolus and up each crown to the top. A heavy bar of platino-iridium or carbon-fused platinum is then fitted

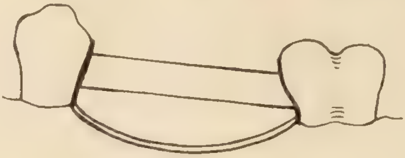

*FIG. 2.*

between the ends of the platinum strip at an imaginary position, which will permit the pins of the teeth to be used to rest on the same. The bar used in these cases should be of at least 20 guage thickness and one-eighth to one-quarter inch wide. This is fitted edgewise between the upturned ends of the matrix (Fig. II.) The two are then united at the ends with a generous quantity of Ames' solder. The teeth are now to be arranged along on the bar and soldered thereto, not bending the pins. These may be plate teeth or simply facings. Those for rubber may also be used, but require closer calculations.

Our case is now ready for the porcelain. This should be of finely ground Close, Whitely or Brewster. Carefully pack between the teeth and contour to the full extent. If there has been much absorption, gum enamel may be used to represent the gum. A sectional view of the matrix, bar and facing is shown in figure 3. Figure 4 shows the case with the porcelain added

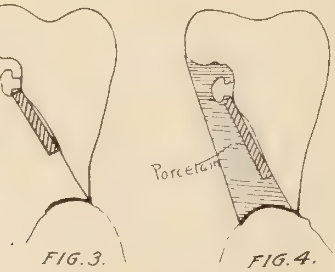

*FIG. 3.* *FIG. 4.*

The part next to the tongue should present a plane and solid appearance. All the space between the teeth should be filled in solidly with porcelain, and no attempt should be made to represent the interdental space. Upon the buccal aspect this may be done to some extent, but the deeper the impression, the weaker and less hygienic will be the piece.

When the porcelain section has been finished the platinum at the ends is carefully cleaned of any porcelain that might have fused on the same and then placed in its proper position upon the alveolus. It is then covered, all except the ends, with plaster and asbestos investment. The whole is dried and the crowns are then united with the platinum ends with solder, completing the case.

### INLAYS.

There are two porcelains used in this work, namely—high-fusing and low-fusing. Those which can be fused in a gold matrix are called low-fusing, while those which require a platinum matrix are known as high fusing. Each has its advocates The writer is inclined toward the high-fusing.

The first condition is access to the cavity.This must be better than where a gold filling is to be made. The gold filling is introduced piece by piece, but the inlay is placed in one piece. The cavity is prepared without undercuts but with walls either parallel or a trifle less at the bottom. No work requires better judgment as to the indications for inlay and closer attention to details than this. Those cavities upon the labial surface of the anterior teeth, which formerly required unsightly gold fillings, are especially easy and most advantageously treated with porcelain. The beginner should select this class of cavities at first and as he becomes more proficient, more difficult ones can be attempted.

While the low fusing porcelains can be fused in a gold matrix a material easier to manipulate than platinum, yet if platinum is annealed at a white heat it will be found almost as pliable as gold. Repeated annealing is also essential. All metals after being bent become harder and repeated annealing should be practiced during the fitting of the matrix.

A piece of .001 thickness somewhat larger than the cavity is placed over the cavity and gradually forced into the same by the use of burnishers, punk and cotton. By frequent annealing and not too much force, a cup will be quickly formed without puncture at the bottom. If however at the very last a break is seen at the bottom no harm will be done provided the porcelain is not forced through.

The matrix having been formed it is filled about flush with a dark shade of high fusing body. The Brewster outfit for this work contains what is known as foundation body. This is fused and the inlay tried in the cavity and all the margins carefully gone over with the burnisher. The inlay is then removed and porcelain enamel to match the color of the natural teeth is added of sufficient quantity to over contour. If the judgment has been good, when this is fused, very little dressing will be necessary.

The platinum is carefully stripped from the inlay, begining at the center and stripping outward. The inlay is now ready for setting which should be done with a cement near the color of the tooth, bearing in mind that the thinner the inlay the more likely its color will be affected by the cement. After being set the inlay is to be dressed and polished with stones and discs.

The beginner should select medium sized and accessible cavities and as he acquires skill in the management of the matrix he can attempt more difficult cases. No work requires the delicacy of manipulation that is encountered in porcelain inlays and the practice of this branch where indicated will not only be pleasing to the refined patient but will reflect credit upon the operator.

Levitt E. Custer.

# SUGGESTIONS TO NOVICES IN PORCELAIN WORK

BY ROBERT TUCKER MOFFATT, D. M. D., BOSTON, MASS.

As others will undoubtedly speak of the detail of procedure in making and setting porcelain fillings, I will endeavor to point out a few of the difficulties of the work, and call attention to some points that should prove of interest to beginners.

## GLASS.

Roughly, glass may be described as a substance resulting from the fusion of a combination of silica (rarely boracic acid), with various bases. In crystal or flint glass, oxide of lead is the principal base. Glass is a silicate of at least two metals belonging to different groups, one of which must be an alkaline metal. Porcelain, (century dictionary)—"a ceramic ware having a translucent body, and when glazed having a translucent (*or transparent**) glaze also. Most porcelain also contains clay. (*In the base**")

There is to me a decided error, in calling recent productions for dental purposes, "Porcelain." The majority of these materials are properly and truly speaking, glass. To one who wants to make a success in porcelain work this distinction should be thoroughly considered. Having had about twelve years of experience in making and using very high-fusing porcelain for carved teeth, as well as in the use of about eight of the more recent "porcelain enamels," I feel qualified to draw the comparisons.

## TRUE PORCELAIN.

True porcelain tooth-body, as we have known it for the past eighty years or more, consists of silex, feldspar, kaolin, and the coloring matter, this latter being the oxide of various metals. This is the material of which the base of porcelain teeth is constructed, the balance being enamel, made of feldspar, a small proportion of silex, coloring matter and no clay. This brings this substance under the definition of true porcelain as given above. I have used this material for inlays, tips and corners for a number of years. It fuses at between 2000 deg. F. and 3000 deg. F., according to the relative proportions of the three ingredients, the coloring matter having nothing to do with the fusing point, but the *color* being considerably affected by the degree of fusion. The mixture I have used fuses just below the melting point of platinum.

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*Parentheses and Italics mine.—R. T. M

The present day "porcelain enamels" so called, are nothing more nor less than a solution (when fused) of silex in glass. They can be made from practically the same formula as the enamel of continuous gum, with, of course the proper coloring matter.

### THE VARIOUS PORCELAIN ENAMELS.

Various porcelain enamels on the market, in the order of relative fusibility are, (lowest) Ash's low fusing, Ash's high fusing, Jenkins', Consolidated, Whiteley's, S. S. White's Improved, and Brewster's. I would advise against the use of Ash's low fusing, as it fuses at such a low point that it is very easy to burn out the color, and it also contains so much lead that it will turn black or dark in the mouth within a year. This is proof that this "porcelain" contains considerable lead, and is really a glass.

The Jenkins material flows very evenly and smoothly, can be fused in a gold matrix, has a good variety of colors, but is the most expensive on the market.

The Consolidated and Whiteley's are practically both alike, and flow at about the same temperature, but are "coarse" and "crumbly" to handle, although they fuse evenly and smoothly; the variety of colors is not so good as in Jenkins', and White's Improved set.

S. S. White's improved set, which I consider to be the best, for all purposes, of those that I have used, has the best range of colors, the most natural, life-like "bony" look, is the highest fusing, requires a platinum matrix and is inexpensive.

The Jenkins' outfit is unquestionably the best of the low fusing sets.

Personally, I prefer the high fusing materials, and consider that the best results can be and are attained with their use, and I believe that the durability will prove the greatest with these. Frail edges and points are less liable to injury in the high fusing than in the low, and there is also less shrinkage with the higher fusing bodies.

### USE OF GOLD-FOIL, GOLD AND PLATINUM-FOIL, AND PLATINUM-FOIL FOR MATRICES.

The advocates of gold claim, that a more perfect matrix can be made with that metal than with platinum, that only one burnishing is necessary to accomplish the result aimed for, and that the material being invested will not warp. I believe that these claims are justified, the first especially so in small cavities in which you wish to place an inlay. Two disadvantages, however, are the additional time required for investing and subsequent drying out of same, and the fact that the inlay cannot be tried in, to verify the color and contour, without reburnishing and reinvesting. Platinum, as first procured for this use, *i. e.,* matrices for inlays, etc., was harsh and stiff, and not very malleable or ductile. As now produced, these difficulties have in great measure been eliminated. The S. S. White Co., have now a foil for this especial purpose, which is soft and burnishes well, without tearing, and I think that I can accomplish as good results with it, as I can with gold, and in much less time. It is unnecessary to invest this, it can be tried in after each bake, for verification of color and contour, and additional burnishings made around the cavity margins, resulting in a gradual thinning out of the platinum at this point, thus making a better joint.

Gold and platinum-foil, as may be readily inferred, possesses some of the advantages of each, and lacks some of their disadvantages. It is stiffer than gold, but softer than the platinum; Jenkins' and lower fusing bodies, can be fused in it without investing. I think that all of these should be at hand to use, according to the case, and no dentist who wishes to accomplish best results, will be without *both* high and low fusing materials.

Brewster's material I have not used, but judging wholly from their circulars, I am inclined to believe that they have hit the point that will have the most to do with successful treatment of the color problem. The point to which I refer is this: —they have three *basal* colors;—these are opaque and when super-improved with the proper transparent enamel color will reflect the light rays to the eye in a manner that will give the best color results, because the cement will have less effect than when a one homogeneous mass of transparent porcelain is used. This is a point that I have advocated for several years, and ever since I became conversant with the proper handling of porcelains and enamel in the carving of porcelain teeth.

### PORCELAIN FILLINGS NOT NEW.

Porcelain fillings are not as new as many of the younger dentists seem to suppose; I have used them since 1894 My father and Dr. A. H. Parker, with whom I was at one time associated, have records of tips and fusings made in 1869-'72-'85-'88-'90. Dr. Herbst, of Germany, brought out some glass inlays in 1882. Of course the materials and methods have been greatly developed and improved since Dr. Jenkins in 1897 brought his material to the notice of the profession. We certainly owe him much for the patient development of his almost perfect material. The electric furnace has also had an important part in the development of the present methods.

I prefer the electric furnace for my work, as all porcelain materials can be fused in it, and I consider it the best furnace for the purpose.

In conclusion—beginners are apt to undertake difficult fillings, and this accounts for many failures; experience, as in most other matters, being the best teacher. The operator must do his own work for perfect results, parts of the work, (as for instance, the fusing) shall not be intrusted to an assistant in the laboratory. With a Hammond furnace for $35.00 or a Turner gasoline furnace for $20.00, and a box of S. S. White's bodies at $12.50, one pennyweight platinum-foil, $1.35, one has all the essentials necessary to commence one's experiments. Of course one must have patience, artistic temperament, a sense of form and color, a steady hand, and a love for the work in order to be successful. Other points, and there are many in this work, I leave to other hands for treatment. A whole book might well be devoted to porcelain and enamels, and the adjuncts necessary to the work as applied to dentistry. I recommend to beginners, the reading of the article by Dr. R. Ottolengui in the *Items of Interest* for April,1 1902, with particular attention to his "mortise joint," and the same journal for June, 1901, article by Dr. Capon, for durability.

A partial bibliograph which may be of assistance, follows:

| *Items of Interest.* | Title. | Author. | Page. |
|---|---|---|---|
| June, 1901. | Porcelain Inlays, | Dr. F. T. Van Woert, | 416 |
| November, 1900. | Porcelain in Dentistry, | Dr. Geo. W. Schwartz, | 801 |
| June, 1900, | Porcelain Inlays, | Dr. W. A. Capon, | 422 |
| September, 1901. | Practical Hints to Porcelain Workers, | Dr. W. A. Capon, | 685 |
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Robert Tucker Moffatt,

# PORCELAIN INLAY WORK.

BY F. T. VAN WOERT, D. D. S., BROOKLYN, N. Y.

For the past five or six years, the dental practitioner has been at a loss to overcome the prejudice of a gold display in the anterior teeth, in the mouth of the female portion of our patients at least, and as a result porcelain inlays and fillings have come to the prominent position in our discussions, formerly occupied by cataphoresis, copper amalgun and so forth; and the all important question at present, is as to the possibility of its relegation to the top shelf with the others, or how best to perfect it, that it may become an established and useful part of our science, and as the problem is best solved, if at all by the exchange of ideas in methods and so forth; this short sketch is presented with the sincere hope that it may add something towards the ultimate solution.

In accepting Dr. Jenkins' statement, that the cement does not wash from the space, which it occupies between the porcelain and the tooth to be true, it would seem that there was hardly any limitation to the value of the modern method of porcelain work, but it is not my purpose to attempt a differentiation between the practical and impractical cases for its application, but rather to detail a personal method of manipulation and describe some of the appliances used in the same.

### LOW FUSING PORCELAIN.

In the beginning I felt very strongly against the use of low fusing mineral body, but with the introduction of Dr. Jenkins' latest products I have become thoroughly converted to its use, which will explain the absence in the following matter, of any reference to the use of platinum foil and other materials, of which I am already on record of having advocated in the past. I still believe, however, that at that time, my deductions were on the right side, and that the operations performed were with the best materials to be had then and the change is brought about by the very marked improvement, and I might say perfection to which Dr. Jenkins has brought the present.

### PREPARATION OF CAVITIES.

In the preparation of cavities for the introduction of porcelain, one point has been largely overlooked, I think, in the past, that of the formation of the margin most prominent. To show the least reflection of cement at the line of union, the walls of the cavity should be as nearly square with the floor, as possible, and have sufficient draft for the removing of the matrix. The beveling of the walls in one direction or the other causes a reflection of the cement either through the porcelain or the enamel, and the line surrounding the inlay is made to appear very much broader than it actually is, a difficulty which is not benefited by time, and the action of the fluids of the mouth. It is a well known fact that wherever the inlay and tooth substance is so formed as to make heavy square walls, the cement line almost entirely disappears in a short time after their insertion, while on the other hand, the opaque cement reflected through the translucent enamel, or porcelain never disappears.

### IMPORTANCE OF ETCHING THE INLAY.

Another very important consideration in the preparation of a porcelain inlay, in particular, is the possible reduction of reflection by perfectly etching or grinding the under surface or the portion coming in contact with the cement. A simple illustration can be had by taking two pieces of glass of equal thickness, or better still, one piece, a half of which of its surface has been ground and the other left clear or transparent, lay it upon a piece of colored paper, and it can be readily seen how much paler a shade of the color is produced by that of the ground portion over that of the clear. Still further a small piece of porcelain, particularly the Jenkins prepared in the same manner, and imbedded in cement, will give a similar result, not as marked because both portions are translucent, instead of one being transparent. I have found the simplest method of procuring a surface as described, on a porcelain inlay, is best accomplished by imbedding the face of the inlay, in base-wax, and covering the exposed portion with hydrofluroric acid for five or ten minutes, after which it can be cleaned and undercuts made with a diamond disk. Such a surface not only serves the purpose named above, but adds greatly to the strength of the setting, because of the strong adhesion of most cements to such a surface.

### GROOVING THE INLAY.

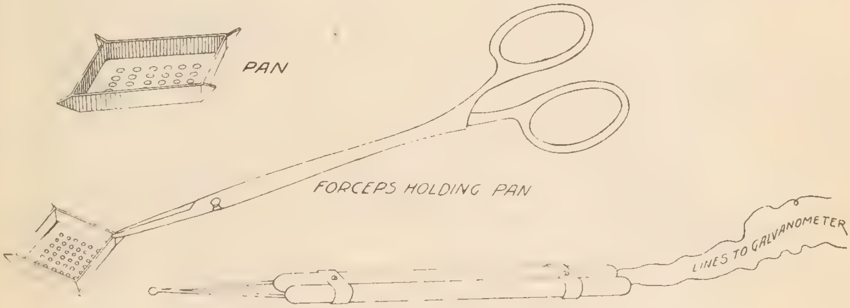
In the forming of grooves or undercuts, after the etching, I have found that when a groove is continuous, that it weakens the inlay, hence I have adopted a plan of making irregular slots at intervals and as much out of line as possible, and the result is a very much stronger inlay, and just as secure an attachment, particularly in cases where there is a contour.

### REMOVAL OF THE MATRIX MATERIAL.

The question has often been asked me, what to do when a gold matrix did not readily peel from the porcelain. Some recommend the scraping away with sharp instruments, and others claim that when not near enough the margin to reflect through the porcelain, it can just as well be left, but I prefer complete removal, and if there is the least difficulty catching it with foil carriers, I throw it in a small breaker partly filled with aqua regia, and in a few moments the gold will be dissolved leaving a clean nice surface.

### BAKING THE INLAY.

Now as to the procedure in baking inlays, I have, after an extended series of experiments, adopted the following method: Whether using gold or platinum as a matrix, I always invest the same in a paste made of powdered asbestos and water, as recommended by Dr. Jenkins, and to avoid the delay usually caused by the generation of steam, in the bottom of the pans, if the attempt is made to dry out the investment rapidly, I have pans formed from square pieces of platinum, the four corners of which are pinched together, leaving a very convenient protrusion for attaching the pliers or small forceps, which has many advantages over the other forms, in that any one of the four sides may be made the front, to better see the condition when the case is in the muffle. (See Fig. 1.)



PYROMETER

These pans are perforated in the bottom, or filled with small holes, which permits of the ready escape of steam, so that the case may be put in the hot oven while yet green.

### INSTRUMENT FOR HANDLING THE PANS.

I have found among surgical instruments a little artery forcep, known as the mosquito forcep, which is a most desirable instrument for handling the pans, conveying them to and from the furnace, as the forcep is self-locking and will maintain the attachment until released. (See Fig. 2.) These instruments may be had at most any surgical supply depot, at nominal cost.

### INVESTMENT MATERIAL.

In preparing the asbestos for investment, I use what is known as a bi-carbonate of soda bottle, making it about half full, to a creamy consistency, which can be kept in the cabinet beside the chair and ready for use at any moment. This is a very much cleaner and neater method, than mixing for each case. In the manipulation of the body itself, I find that the small porcelain-mixing plates, such as used by artists, containing three square and three round depressions, one pipette stoppered bottle for distilled water, and three artist's camels-hair brushes, Nos. 1, 2 and 3, constitute the most desirable outfit that I have yet found. Distilled water is very much better for mixing the body than alcohol, because alcohol evaporates so rapidly that it does not give time to consolidate the mass by tapping the pan on its side, and the excess water can be easily removed by absorption with small pieces of white blotting paper cut into a triangular shape.

### FUSING POINT OF DIFFERENT BODIES.

A knowledge of the fusing point of the different bodies is of a considerable value to the operator, and the following tests were made by Mr. John E. Hammond, for me on Friday, October 24th, and in my presence.

Pyrometer Tests to determine the fusion point of a few porcelain Inlay and Crown and Bridge Materials.

| Color. | Temperature. | Time. |
|---|---|---|
| Jenkins | 1616° Fahrenheit | 1 minute |
| Whiteley's | 2138° Fahrenheit | 4 minutes |
| Brewster's enamel | 2138° Fahrenheit | 4 minutes |
| Brewster's body (white) | 2140° Fahrenheit | 4 minutes |
| Close's Body | 2300° Fahrenheit | 3 minutes |
| S. S. White's new Inlay Material | 2300° Fahrenheit | 3 minutes |

The instrument used in these tests was a pyrometer, (See Fig. 3,) with a certificate from the German government and of the Wester Meter Co., of the United States, as to its accuracy.

The instrument consists of a differential galvanometer, calibrated in milli volts and centigrade temperature, which is then transposed into Fahrenheit, and two wires, one of rhodium and the other of platinum, insulated with glass, to within about two inches of the part where the two are united in a little ball. This ball point is placed in the furnace and the opposite end connected with the galvanometer, the heat generating electricity in proportion to its intensity, and in the electric furnace, the slightest variation in temperature is easily produced by the manipulation of the rheostat, and is at once discernible upon the scale of the galvanometer.

### FUSING OF THE BODY.

This brings us to the question of the best method of fusing the body, and I do not think with those having experience in the use of the electric furnace that there can be any doubt but that electricity has very marked advantages over gas. The temperature can be maintained at a very even degree, which makes it almost impossible to draw the color in the porcelain, when once the furnace is understood. Affixed is the result of a series of experiments made by Mr. Hammond, showing change in temperature, time consumed and the number of steps on the rheostat, etc.

Heat developed by Hammond Electric Furnace No. 1. Current 115 volts. Temperature of room, 76°. Control lever moved from left to right.

| | |
|---|---|
| Step No. 1, time, 15 minutes | Temperature, 1727 |
| Step No. 2, time, 10 minutes | Temperature, 1990 |
| Step No. 3, time, 10 minutes | Temperature, 2137 |
| Step No. 4, time, 10 minutes | Temperature, 2322 |
| Step No. 5, time, 10 minutes | Temperature, 2505 |
| Step No. 6, time, 5 minutes | Temperature, 2582 |
| Step No. 7, time, 10 minutes | Temperature, 2757 |

These show the fine gradation and accuracy with which the heat may be maintained.

### TIME CONSUMED IN MAKING AN INLAY.

In conclusion the time consumed in making and setting an inlay, with the appliance mentioned above, is about one hour. Hence all else being favorable, porcelain is the most desirable material, where gold would prove objectionable on account of its appearance. There are some cases in the molars and bicuspids, where caries has been so extensive that it is impossible to fill with any degree of certainty with metal, and which cases have been preserved by many of us in the past with a cement filling, renewed from time to time. In such, porcelain becomes almost invaluable, and where great strength of material is required, there is no doubt that the Jenkins body will stand the test and prove entirely satisfactory.

F. T. Van Woert

# PORCELAIN INLAYS.

BY W. T. REEVES, D. D. S., CHICAGO, ILL.

In writing a short paper on this subject for the readers of THE DENTAL SUMMARY, I desire to reiterate and emphasize some principles that I believe are important in the successful use of

## PORCELAIN AS A FILLING MATERIAL.

Porcelain, as a filling material, is ocupying a prominent place before the dental profession today and is destined to occupy a still more prominent place in the near future. We have passed the time when its advocates have to contend and argue for its many points of excellence and in the future have only to develop it to the fullest extent possible, simplifying all the details of technique so that it can be handled successfully by all. The most the opposition can say today is, "that it is only the few who are successful and that the great majority of dentists will never be able to master the technique and succeed in inlay-work." It has been my good fortune to have helped start a good many in this work, the number embraces dentists from all sections of the country, north, south, east and west, and not one of them but is succeeding beyond his expectations. They are of the "great majority" and what one can do I believe all can do. For the encouragement of all I want to quote a few sentences from numerous letters I have received in the past two years:

Wisconsin—"Before closing I want to say that your idea of underlying colors is worth double the fee you charge for teaching it; when you demonstrated it to me I did not take much stock in it. I am having good success."

North Carolina—"It may interest you to know, Doctor, that I am having good success with my inlays and that I give a clinic on inlays before our state society next June."

Michigan.—"But for myself can say I am making splendid headway and doing considerable of the work with very gratifying results to both my patients and myself. I am surprised at the demand there is for the work and believe the demand is only limited by the confidence a man has in advocating its use and his ability to successfully perform the different class of operations presented."

Ohio.—"Am having very fine success with porcelain inlays and feel convinced you have the right principle."

I could quote many more which would all go to prove that the average dentist does succeed and will succeed if he but give a tenth of the time to mastering the technique that he gave to learning to put in gold and not attempt an operation at the chair, without previous dummy work in the laboratory and without any conception of the material and the principles that are to be carefully studied and followed out. My observation extending over several years leads to this conclusion. I believe any dentist, no matter what his ability or where he is located, (if he gives a reasonable time to mastering the technique), will accomplish twenty-five per cent better quality of work with porcelain inlays than he does with gold—and that the great majority of dentists will succeed far beyond this. In a few years, when porcelain inlays have come into general use, all will have to acknowledge that porcelain as a filling material is the greatest tooth saving material we have ever used.

You who are inclined to scoff as you read these statements remember this, you are doing so from your point of view, and your point of view may be the result of one of several causes. You have never attempted to do anything in porcelain inlays,—if so, you know nothing about the subject and are not competent to form any judgment as to what the results may be. No one is capable of forming judgment in any field in which he has not had personal experience.

You may have attempted inlays, failed and abandoned the same.

### CAUSE OF FAILURE.

If so you failed through lack of technical knowledge of the work and material you were attempting to handle. Could you have done so well with gold with no better previous preparation? Or you may have seen failures from the hands of others. If so, they may have been due to some one's jumping into inlay work without any preparation other than having seen some one clinic or read some of the many articles that are appearing in the journals, (as so many have done and will do, only to meet with discouraging failure.) Is it fair to form a judgment upon failures, you not knowing what may have been the cause of those failures? It is a dangerous thing to laugh at any predictions that may be made in this progressive age. Today we are accomplishing in the industrial and scientific world what would have been laughed at if predicted only ten years ago.

### THE FUTURE OF PORCELAIN FILLINGS.

That the future for porcelain inlays is practically assured there can be no doubt. The work of the future will tend to the simplifying and harmonizing of methods, and I believe there will be a more nearly uniform method of work, based upon fixed principles than there ever has been in the handling of gold as a filling material. That there is likely to always be two great divisions among inlay workers there is little doubt. The *high fusing* and the *low fusing*, both accomplishing good work, one or the other being easiest in different individuals' hands, both having their strong advocates, just as cohesive and non-cohesive gold has had in the past and in the present. Cavity preparation will ever tend toards simplifying and as the true law of retention is better understood, simplicity will be the rule.

Matrix formation is accomplished in about as many different ways as there are operators, and so in gold packed by as many different styles of mallets and malleting. But as "all roads lead to Rome" it is safest to take a broad, straight road that is sure to land you there even if it takes a little longer time, than a short cut that is full of pitfalls and liable to result in disaster. Each of these three subjects would give matter enough for a paper by itself, but no matter by what road you travel, whether high or low fusing, or what not, all would come to one common point, even if the roads diverged and they separated again, that of selecting the color the inlay is to be.

### COLOR EFFECTS AND SHADES IN PORCELAIN INLAY-WORK.

Here I am going to preach a new gospel and sing a new song, and I hope to make converts of you all. All I ask is that you give it a trial, study it, not a day or a week, but a month, six months, look, look down into the tooth. The more you study and observe, the more you will see, and it will surprise you what a variety of colors you will find in a tooth. And just as you are able to see these colors in the tooth, and are then able to reproduce them in the inlay, will you approach the perfect matching of inlay to tooth. The color of the enamel of all teeth is practically the same, or more strictly speaking, the enamel is colorless, aside from the slight greenish-gray tinge it has. The variation of color of different teeth in different mouths, comes in the colors in the dentine. The shade of a tooth comes from *underlying colors*, it is *underlying colors* you want to look for. It has been the practice of dentists all these years to select facings for crowns or teeth for dentures, by matching for general effect. The tooth guide furnished by the different manufacturers is used and a selection made, (by matching for general effect,) that results so happily no one would detect that an artificial substitute existed among the natural teeth. The same method of color selecting will not result as happily in selecting the color for an inlay, because the colors in the tooth are underlying colors and they want to be in the same relative position in the inlay in order that the inlay match the tooth. The different bodies on the market today are furnished with a shade guide. The shade guide, the color that a baking from any of the several bodies will be *if you bake a piece of the same bulk as the shade guide*, a thinner layer or less bulk will give a lighter shade of the same color—and right here I want to state that I never mix two or more bodies together to vary the shade of one, but obtain the shade wanted by the thickness of the layer used. You never can mix two or more bodies together in small quantities and obtain a desired effect and tomorrow duplicate the mixing. But you can duplicate tomorrow what you accomplished today by estimating the thickness of the layer employed. And every baking you do, noting the results you get, adds to your artistic ability to produce results in baking porcelain. Now, I do not use the shade guide as you do the tooth guide to match the color of the inlay, but use it to determine the strength or degree of the color I see in the tooth. I can best illustrate this by citing the means employed by an artist or sculptor to execute his coneption of a painting or statue. In his mind he has a perfect picture of what he wishes to produce. Perfect in every detail, but he can not go to the canvas or to the block of marble and execute that conception without some tangible aid. The sculptor will seek models that embody his conception, and he may have to employ several models for one piece of statuary, finding in one the head or poise of neck, in another limbs, etc. He has to have that before his eyes to reproduce what he sees in his mind. The same with the painter, he may be a skilled mixer of pigments, but he cannot mix and produce the color he sees in his mind unless he has that color before him in some tangible form. He seeks until he finds the color he wants to produce in drapery, or some other material, and with the color before him, he can then reproduce the color on the canvas. Now the shade guide is used on the same principle. If I see yellow in the tooth I hold the yellow of the shade guide to the tooth that by comparison I may determine the strength of the yellow. The same if I see gray, blue, brown or any other color. It is only by comparison that you can fix the strength or degree of the color you see, looking from tooth to guide and guide to tooth fixes in your mind the color you see. A typical light yellow tooth that one of the medium yellows appears to match perfectly makes you think that an inlay baked of that body will be an exact match. You are surprised when you put the inlay in the tooth to see how far off the shade is. Now a closer analyzing of the color, (looking down into the tooth), will show you that there is considerable gray in the central third of the tooth. Holding a gray of the shade guide to the tooth will show you that the gray is modified towards the cutting edge by a bluish tinge; you could not see the blue until by comparison it was developed—you want all these colors in the inlay in order to have a perfect match. *Look for underlying colors;* note the degree or strength of these colors; make a memorandum of the same and the place they occupy in the tooth, that you may reproduce them in your inlay.

### A FEW WORDS ON BAKING AN INLAY IN LAYERS.

This paper is now longer than I expected to write, and time or space will not permit of more than a general outline. Baking in layers enables you to place your colors just where you see them in the tooth. Each color put on must be baked by itself; if you attempt to lay one color over another and bake at one baking it will result in a mixture, while if baked separately, each will preserve its identity. An inlay baked in layers accomplishes three things:

*First* A neutral translucent-looking inlay. Put your colors on strong enough, that when covered with what might be called an enamel layer will allow the colors to reflect through, the enamel layer modifying and harmonizing the colors. This will give you the translucent effect so desirable.

*Second*. If built of three or more layers of different bodies it will break up the absorption and refraction of light rays, so that from whatever angle or point of view you look at it, it will appear practically the same. An inlay built all of one body or mixture will absorb light only from one direction, and viewed from one point will look all right, but from the opposite point of view will show as differently as black and white. An inlay in layers will come very near imitating nature's method of building up a tooth and by breaking up the direct absorption and refraction of light rays, will come very nearly looking the same from all points of view.

*Third*. You overcome that great bugbear of most inlay workers, the cement showing through after the inlay is set. An inlay built up in layers will almost overcome the reflection of the cement through from underneath. You will often hear operators say they had a splendid color before the inlay was set, but after it was set the cement killed it entirely. That was because the inlay was baked all of one body and the cement could reflect through from underneath as easily as the light was absorbed only in one direction from above. The three points I claim for this method are translucency, avoidance of shadow, and prevention of cement reflection from underneath.

W. T. Reeves

# THE PORCELAIN INLAY.

BY F. T. MCNAMARA, D. D. S., ST. PAUL, MINN.

During the past few years there has been a great deal written and said about the status of the porcelain inlay.

I feel that there will be a great work accomplished in this direction. I fear some may differ from me when I modestly assert that the porcelain inlay judiciously and skillfully used will prove worthy of more than passing consideration.

Those of you who have the patience and stick-to-it-tiveness to perfect the work can get better and more artistic results where porcelain is indicated than with other fillings.

Porcelain is practically a nonconductive substance, consequently is not materially affected by thermal changes. It does not require malleting, nor does it require undercuts which weaken the walls of the tooth. It is claimed by advanced disciples of porcelain that the insertion of an inlay strengthens the tooth on the principle that a board formed by the gluing together of two boards is stronger than a single board of the same thickness. Added to these, the comfort of the patient is a strong argument in favor of porcelain.

Let me here say with all the earnestness which I possess that to insert a successful, artistic porcelain inlay requires more skill than to insert a metal filling. To those of you who are skillful gold operators and who may doubt the truthfulness of my statement, I say, just give it a practical test.

A good porcelain inlay takes more time and skill and necessarily commands a larger fee than other fillings. All progressive dentists acknowledge that the day is passed when to be a skillful operator a man has only to enlarge a cavity in a tooth and fill it with gold.

The question arises, "Will the porcelain inlay prove as artistic and serviceable as the porcelain crown?" Time, that judge which solves many profound problems, will determine this also. Many of the present most earnest advocates of the porcelain crown did not believe that this crown could withstand the stress of mastication, and some of our best dentists are still skeptical.

Gentlemen! The porcelain crown has been tested and I can say without fear of contradiction that when skillfully made and of the right material, proper occlusion being secured, it does stand the stress of mastication.

Progressive dentists do not adorn the anterior teeth of the patient's mouth with the shining "gold crown," which to put it baldly is the receipt for value received and serves to emphasize the owner's defects.

Yes, the porcelain crown, judiciously used, has the requisite strength and has attained a deserving and permanent standing in the dentistry of today. I speak not merely from a mouth to mouth study for the past eight years, but from actual personal experience. I am the possessor of two porcelain crowns that have served me six years, faithfully and effectively. Time is all we need to convince the "unbelieving Thomases" that judgment and skill will do with the porcelain inlay what it has done with the porcelain crown—establish it on a permanent basis of usefulness and beauty.

### RELATIVE VALUE OF BODIES.

There has been a great diversity of opinion concerning the relative values of the different kinds of porcelain on the market. Each manufacturer makes special claims of strength, color, etc., for his wares.

Porcelains are divided into two classes: "High Fusing" and "Low Fusing." High fusing bodies are those that melt at a higher temperature than gold, low fusing those that melt below the fusing point of gold. I may safely say that the majority of porcelain inlay workers prefer the "High Fusing" bodies, claiming that they are stronger and hold their color better.

The advocates of "High Fusing" bodies believe that the "Low Fusing" porcelains not only discolor in the mouth in a short time but are absolutely useless. Some three years ago, while working with the "High Fusing" bodies, I became skeptical of this theory. I found I could change the fusing point easily by simply grinding or pulverizing without changing the elements. This led me to investigate the properties of the "Low Fusing" bodies; I wanted to satisfy myself, beyond a doubt, concerning what had been said about brittleness, color and strength.

I prepared cylinders, size 8 M. M. X. and 7 M. M. of both high and low fusing bodies. The following high fusing bodies were used: Close's, Consolidated, S. S. White, and Brewster's; and of the low fusing bodies, Ash & Son's and Jenkins'.

When placed in the dynamometer these porcelains withstood a thousand pounds pressure: Close's, Consolidated, S. S. White and Jenkins'. When removing from the dynamometer, the cylinders separated into longitudinal layers. The lines of separation seemed to compare favorably with the enamel rods of a tooth.

Brewster's body pulverized with a pressure of 655 pounds; Ash & Sons' with a pressure of 455 pounds.

In the preparation of the cylinders I tried to be just and impartial. The cylinders were tested by Dr. E. K. Wedelsteadt, of St. Paul.

Anticipating the possibility that some may challenge the above statements, let me ask that others in a spirit of equal fairness make similar tests and record results.

### CAVITY PREPARATION.

The preparation of the cavity is a very important factor in the success of any filling, especially the porcelain filling.

In the preparation of a cavity, the operator has an opportunity of asserting his individuality, but must not lose sight of the most important requisites: The Outline Form, Resistance Form and Convenience Form. It is also very necessary that the outline be symmetrical and artistic.

Care and judgment must be used in the preparation of the cavity. The depth must be such that it permits of sufficient bulk in the filling material to secure strength; the margins symmetrical, sharp and as near as possible laid with a view to being self-cleansing; the walls beveled to a true, smooth, knife edge. (I use sharp chisels.)

In gold fillings we strap gold over the margins to protect the enamel rods from chipping. In porcelain we do not use such strapping, but sharp margins are secured.

### TAKING OF IMPRESSION.

The one great stumbling block in this important work is the *lack of space* when attempting to get an impression between the teeth. If the impression is to be taken between the teeth *insist* on getting space in which to work if you wish to be successful. If the impression is to be taken on the labial surface of the teeth, it is well to pack in gutta-percha to push the gum away, that you may have a definite margin to adapt the impression.

### TAKING OF IMPRESSION IN CEMENT.

The advantage of taking the impression in cement is, you eliminate the thickness of the matrix, thus making a perfect joint. Have cavity free from undercuts and oil with vaseline.

I will here speak of a cement recommended by Dr. Peck which gives good results, "Britton's Vitrified Cement." I have used this cement and find it shrinks *very little.*

Mix the cement thoroughly to a stiff paste. Take the desired amount and roll between the thumb and index finger in soapstone; put the filling in the cavity flush until there is an overlapping to give the general outline of the cavity (as in Fig. 1). Cut a small strip of rubber dam of the desired length and width and hold the cement under pressure in the cavity to prevent expansion. Before cement becomes too hard, loosen

slightly and then press home and you have no trouble to remove impression from cavity. Reinforce impression in cement (Fig. 2); build up with plaster that you may swage without fear of breaking (Fig. 3). Trim down your impression of the cavity, shellac thoroughly the plaster surface which extends beyond the impression of cement and you are ready to swage. Either gold or platinum may be used for the matrix.

Burnish the matrix over the impression carefully with moist cotton and a burnisher; place in the swager and drive home, being careful not to use too great force, as there is danger of tearing the margin of the matrix. Never use a matrix with a defective margin in which to bake a porcelain inlay, as the filling will not fit. Use powdered asbestos and plaster, equal parts; mix and pour over impression to hold matrix in position. It is well to moisten surface of exposed plaster slightly before pouring.

After the investment becomes hard, separate from cement impression and you have the matrix invested (Fig. 4); dry matrix in the furnace to remove any moisture from investment before placing the body in matrix for first baking.

### TAKING OF IMPRESSION IN GOLD OR PLATINUM.

First oil cavity with oil of cloves. Cut a strip of foil which has been annealed to suit the case in hand; place in the cavity and with damp pellets of cotton or spunk, press gently into the floor of the cavity; now place sufficient pieces of spunk or cotton in the space to carry matrix to all parts of the cavity. With a small piece of spunk press the excessive foil over the outer margins of the cavity. Next take a small strip of rubber dam and draw the matrix down to the margins. Remove matrix from tooth and trim down excess, leaving sufficient overlap for investment. Replace matrix in cavity and press to place with spunk. Remove spunk and place the strip of rubber dam and carry down over the margins of the cavity. Take a No. 1 S. S. White double-end burnisher and with a strip of rubber over your matrix burnish thoroughly until you have a *perfect* reproduction of the cavity. Remove strip of rubber and with a smooth burnisher press in the center of cavity to see if your matrix springs. (If the matrix is not down to all margins of the cavity it will spring.)

After your matrix is perfectly fitted (see Fig. 5), then remove. The removing of matrix can be easily accomplished with chip-blower, by blowing gently until it falls out, or better still if you have compressed air this will serve the purpose.

V.

If you have secured sufficient separation and followed the above instructions carefully, you may be sure of a careful reproduction of the cavity ready to invest. I use an investment material composed mostly of asbestos, and dry in the oven at once.

### GETTING COLOR.

Before selecting your color number or numbers, see that the enamel is clean and polished. Always select color numbers with the rubber dam off the teeth. One method of obtaining the color is to pick out a facing of the desired color. If the facing is yellow at the neck and blue at the cutting-edge, and you do not wish but one color, take a pair of incising forceps and cut off the portion you wish to use. Pulverize to a very fine powder; add a little new porcelain as near the shade as possible and fuse in the matrix.

Another method of getting the color, and the one I prefer, is, first: Take shade rings and get the color of the dentin; with this color build the cavity half the required size. This may require two or three bakings. From shade rings get color of enamel and finish.

The inlay, when ready for insertion, should be three shades lighter than the tooth, as the cement will darken the color to that extent at least.

In gold fillings the shadow effects have to be contended with between anterior teeth, but they are more complex where porcelain is used.

Body of a lighter color must be used for distal cavities than for mesial; this is especially so in lateral incisor and cuspid teeth.

Do not over-fuse the body, as the color will be spoiled. It is well to mix the bodies you desire and bake a small amount until you get the color desired.

### CEMENTING THE INLAY.

Now comes the problem of cementing the inlay. Colorless cement has not as yet been produced. The genius who is destined to solve this problem will prove a boon to porcelain inlay workers.

Some of our most prominent porcelain workers claim that where the cavity is properly prepared and the inlay properly adapted (using hydrofluoric acid to remove the glossy cavity surface of inlay), all that is necessary to hold inlay in place is a think layer of cement.

I take a knife-edge corundum stone and make a groove in the inlay before inserting.

Using Harvard cement of creamy consistency, insert inlay (see Fig. 6).

VI.

I always use the rubber dam in cementing in the inlay and allow a half an hour for cement to harden, if "Harvard" is used.

In conclusion let me say that we all make mistakes and I humbly plead guilty to the charge. In undertaking this artistic work do not be discouraged, but rise to the occasion by being honest and persevering in your efforts and you will find "your success equal to your ambition."

I have never yet been satisfied with the most successful of my fillings but do my best each time and try not to make the same mistake twice.

In your work have a definite aim and system. Do not attribute failure to the filling material; there are good ones on the market; and if properly used you can bring out all the beauties of nature.

F. T. McNamara

# SOME NOTES ON PORCELAIN FILLINGS.

BY D. W. BARKER, M. D. S., BROOKLYN, N. Y.

If the suggestions here offered seem to depart somewhat from current teaching the reader is assured they are the result of careful experimentation and are offered with the hope of smoothing in some degree the somewhat rough path of the beginner in porcelain fillings. There is no easy way of making porcelain fillings, but some ways are easier than others.

## SPACING.

Approximate cavities should be well spaced by previous wedging, the same as for gold fillings. Additional advantage may be gained by freely cutting away the labial walls, there being no objection to so doing as there is when gold is used.

## MARGINS.

All bevel should be removed and all margins cut on smooth even lines. A central incisor for instance, having lost a corner the enamel should be cut straight across so as to obliterate all uneven lines. This is apart from merely soothing the margin with fine stones in that it takes out all small curves.. So prepared the joint is much less perceptible and it is easier to get perfect adaptation of the matrix.

## UNDERCUT MARGINS.

Cavities in grinding surfaces of molars having deeply undercut margins may retain a considerable portion of the overhang if after trimming and shaping properly the remaining undercut is temporarily filled with cement or soft stopping while taking the matrix.

## COTTON PELLETS.

Hard rolled cotton pellets a little smaller than the cavity are in many cavities (especially in deep ones) more satisfactory than the chamois discs.

### TEARING THE MATRIX.

In rather deep cavities the matrix is almost certain to be torn while being carried to the bottom. To avoid this: Over a pellet of cotton a little smaller than the cavity, held in the pliers, mold the sheet of gold cut to proper size, then with the pliers carry the cotton and gold together to the bottom of the cavity, afterward spreading the gold to the side walls and over the margins.

### REMOVING THE MATRIX.

If the matrix does not come away easily with the cotton pellets or is liable to lose its shape in doing so, press softened wax into it or drop melted wax upon the cotton. The matrix can then be picked out with a small instrument without injury. No attempt should be made to remove the wax or cotton except by burning out after investment. After drying investment put the melting cup into the furnace and heat up as for fusing porcelain and no trace of wax or cotton will remain.

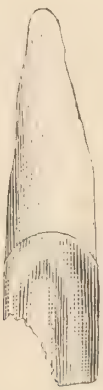


FIG. 1.

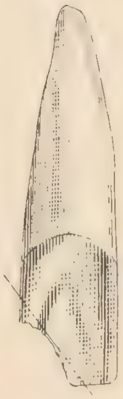


FIG. 2.

### CUSPS AND CORNERS.

When building cusps and corners the melting cup should be tilted up to cause the porcelain while wet to flow in the desired direction or keep it from flowing where not wanted; it may even be turned upside down so the porcelain (and alcohol) hangs from it a pendant drop, and held there a moment until the alcohol evaporates a little and it retains the desired shape.

## ADDING PORCELAIN.

The beginner is apt to add the porcelain too rapidly (as fast as the brush can dip it up) with the result that it overflows he margins producing feather edges, and he fails to keep the filling in the desired shape. The porcelain should not be added until the alcohol of the previous dip has evaporated a little and no longer shows wet and shiny. He should wait while he counts five then go on and the filling may be built in almost any desired shape.

## GRINDING AND FILLING.

It is extremely vexatious to hold a small filling in the fingers while grinding off a little surplus and the subsequent repolishing. Stick the filling in the warmed end of a small stick of modelling compound and the grinding may be done quite easily. The stone should always be run toward the edge, never away from it.

## COPPER DISCS.

The neatest thing for cutting the groove around the filling is a small copper disc (see Fig. 3), used with carborundum

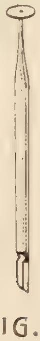


FIG. 3.

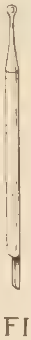


FIG. 4.

powder mixed with glycerine. The discs may be easily and quickly made as follows: Take a piece of No. 34 gauge copper

¼ in. square, lay it on a piece of hard wood and with a smart tap of the hammer drive the point of a broken engine drill into the center of it; flux with chloride of zinc (zinc dissolved in hydrochloric acid to saturation) and solder with a tiny bit of soft solder; put in hand-piece and true it with the pliers; while slowly turning in hand-piece hold a sharp point against the face 1-16 in. from the center making a circular scratch 1-8 in. in diameter; trim down almost to the scratch with scissors and file and finish by running the edge against a file.

Small copper balls (See Fig. 4) for grinding enamel margins may be made by melting a small piece of copper wire on smooth charcoal with the blowpipe and then soldering the globe thus formed to the broken shank of a drill as before described and then turning down to any desired shape and size.

### AQUA REGIA.

The gold matrix may be easily and thoroughly removed from the filling by immersing in aqua regia (nitro-hydrochloric acid) for twenty or thirty minutes.

## PORCELAIN INLAY.

BY J. S. M'CURDY, D. D. S., FORT WAYNE, IND.

The engravings represent a practical case of inlay work.

Fig. 1, Plaster cast showing position of cavity.

Fig. 2, Gutta-percha impression of cavity.

Fig. 3, Alloy mould of cavity embedded in plaster of Paris.

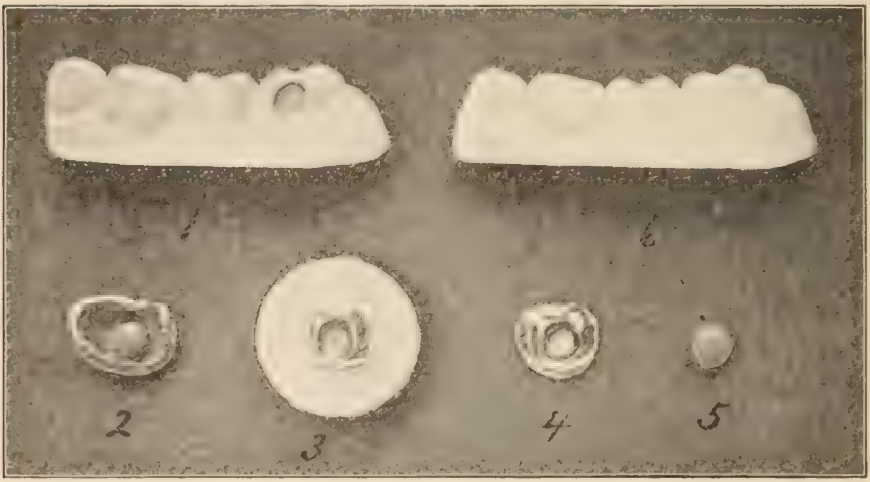
Fig. 4. Platinum foil matrix.

Fig. 5, Porcelain inlay after firing, with foil stripped off ready for inserting in the cavity.

Fig. 6, Plaster cast after inlay was inserted in cavity.

Six years ago I had an alloy filling inserted in a cavity on the buccal surface of my left-lower third molar. The filling became dislodged a few days ago and the thought occurred to me to prepare the cavity, take an impression of the cavity, make a porcelain inlay and place it in position myself, which I proceeded to do with very gratifying results.

Having an electric engine I took the right angle hand piece and mounted a small barrel-shaped corundum point and was able to reach the cavity and see what I was doing by having the hand mirror propped up on my bracket table,—any one who has had a buccal cavity filled can appreciate how it felt when I was grinding out the cavity to get the margins sharp and defined.



I next vaselined the cavity and tooth and warmed a ball of pink sheet gutta-percha which I forced into the cavity and over the tooth, then cooled the gutta-percha thoroughly with ice-water before removing. I then filled the gutta-percha impression with alloy which I allowed to harden until the next day when I had an excellent metal die of the tooth and cavity into which I swaged platinum foil 1-1000 of an inch in thickness by the use of the water-bag swaging device.

For the first bake I placed a thin layer of Brewster's porcelain body in the matrix, just enough to cover it and fused almost to a glaze in the Hammond furnace. For the second bake I gave it another layer of body and the third bake I put on the enamel. After the last bake I removed the matrix, pressed the face of the inlay into a piece of beeswax, leaving the part exposed that came in contact with the cement and placed a drop of hydro-fluoric acid upon it, leaving it about five minutes. After washing with water this left a rough surface to which the cement adhered. I then adjusted the inlay to the cavity. By the use of Ash's Inlay Conveyer I removed the filling, the wax holding the filling in its relative position. I dried out the cavity, mixed some Harvard cement, placed a small amount in the cavity and carried the filling to place with the conveyor and held it firmly to place until the cement hardened.

One great advantage the porcelain filling has over metal filling is the fact of its being a non-condutor and when placed in a sensitive cavity the tooth does not respond to thermal changes.

J. S. McCurdy

# THE CARE AND REPAIR OF PORCELAIN INLAYS.

BY JOSEPH HEAD, M. D., D. D. S., PHILADELPHIA, PA.

The porcelain inlay has passed the experimental stage and is accepted by the profession at large as a legitimate operation. Its advantages are recognized to more than compensate for its obvious disadvantages, but unless these disadvantages are capable of being overcome, the field of the porcelain must be much more limited than its advocates have hoped.

## PERMANENCY OF PORCELAIN INLAYS.

No experienced dentist will deny that well made porcelain fillings are durable; many fillings ten years old are now preserving the teeth. No one will deny that a judiciously made porcelain inlay is the highest product of dental esthetic art.

but even porcelain enthusiasts cannot claim that the esthetic effect obtained is always durable.

Doubts concerning the permanency of the porcelain inlay have been disproved, but now a lesser though pertinent objection arises. This objection is to be found in the dark line that will sometimes appear around the cement joint of inlays. In by far the majority of cases this blemish does not appear, but when it does appear there is room for discussion as to whether the esthetic appearance of porcelain is superior to gold. Porcelain inlays are also prone to chip on the edges when subjected to the excessive force of mastication. It might be said that metal fillings also sometimes chip, but although gold, tin and amalgam occasionally chip, they can be repaired by an addition of the same material and made just as good as new if decay has not set in, while with porcelain inlays this is not possible and unless some other means of repair is used, an entirely new filling must be inserted.

### STAINED JOINTS.

The difficulty of cleaning the fine edge or restoring the chipped margin of inlays has been a serious objection. The most loyal patient will become weary of having new fillings inserted year after year, weary of the trouble, weary of the expense, but if during the semi-yearly polishing of the teeth, the margins of the inlays where necessary, can be cleansed and a chipped edge restored, the cause of inlays will receive new impetus. All porcelain inlays do not discolor at the margins or chip under the force of mastication, but a certain per cent of them will, and it seems impossible to exactly prophesy in which mouth the discoloration or chipping will or will not occur.

In mouths where the cement lasts well, there is less likelihood of this trouble, but even in such mouths bacterial stains may appear. In mouths where tobacco is used, the stains are usually most apparent and yet there are well known cases of deep marginal discoloration where no tobacco has been used. To put in new cement over a stained margin is at best a partial remedy, but if the margin can be first cleansed, the addition of fresh cement will make the inlay as good and beautiful as a new one. The fine joints of porcelain inlays cannot be cleansed by the ordinary methods of instrumentation, but can be readily bleached in the following way:

### BLEACHING STAINED JOINTS.

Rubber dam should be placed over the tooth and the inlay washed in chloroform and dried. This chloroform is for the purpose of removing all fat. Then a piece of cotton soaked in 25 per cent pyrozone should be placed upon the inlay and the steam of the pyrozone be driven into the tooth around the inlay by a hot flat instrument placed on the outside of the wet cotton. When this has been done two or three times, the surface of the filling should again be thoroughly wet with pyrozone and a blast of hot air played upon it, when the margins will suddenly become snow white. The end of the hot-air syringe should be almost red so that the air will be hot enough to explode the peroxide of hydrogen within the tooth substance; for nascent oxygen just liberated is much more powerful as a bleacher than ordinary oxygen and a mere evaporation of the pyrozone will not have the power to quickly free the oxygen from the pyrozone. When the bleaching is complete, cement can be flowed into the crack and the whole tooth temporarily covered with varnish or paraffin. This procedure as before stated will make the filling appear as well as it did when new and will not occupy more than five minutes time.

### HOW TO REPAIR CHIPPED INLAYS.

Chipping may occur on the grinding surface of a molar or bicuspid, for even from a good joint the cement will sometimes slightly wash, and a chance crushing strain from the opposite tooth may readily chip the unsupported porcelain. This gives renewed opportunity for the washing out of the cement and for further chipping. Chipped margins in molars or bicuspids where a slight line of metal will not be objectionable can be easily mended in the following manner: The edge should be cut out with a fine fissure bur and filled with gold or amalgam. The method of filling is as follows: Wash out the fissure with alcohol and dry. Place in the fissure a small quantity of thin oxyphosphate of zinc and squeeze it out with pieces of sponge gold, being careful not to make lateral pressure on the filling in a way to dislodge it. Let the cement harden, then cleanse the margins, condense the sponge gold and finish the filling in the usual way. Where amalgam is used, the cement should be squeezed out by soft amalgam in the same way; the margins then cleansed, and amalgam dried of its excess mercury added until the filling is of the proper consistency to set well.

In closing this paper, it might be well to speak of one of the most trying mishaps in porcelain inlay-work and its prevention.

When a corner of a central or lateral incisor is restored in porcelain, in a certain percentage of cases, the margin of the porcelain or enamel will chip at the cutting edge as in Fig. 1:

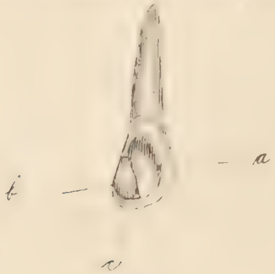


Fig. 1

*a* Tooth. *b* Inlay. *c* Crack.

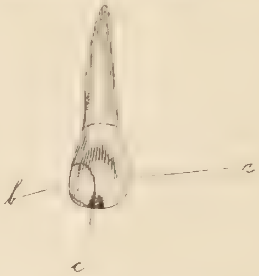


Fig. 2

*a* Tooth. *b* Inlay. *c* Filling.

When this has occurred, the only remedy is to make a new inlay or to bleach the fissure and fill in with cement again. But where this tendency is known to exist, the filling should be inserted as usual, and the margin of the tooth along the cutting edge should be cut away so as not to expose the anterior enamel line. Into this cavity, as above directed, sponge gold should be squeezed in cement and a filling inserted so as to slightly overlap the porcelain. This if done as in Fig. 2, will be entirely invisible from the front and will in most instances protect the inlay from fracture.

Joseph Head

# A PLEA FOR CONSERVATISM IN PORCELAIN INLAY WORK.

BY C. E. BENTLEY, D. D. S., CHICAGO, ILL.

The advent of porcelain inlay has caused a tidal wave to sweep over the dental field from which few have remained untouched. Whether in the recession of this wave, which is sure to follow, the usual wreckage attending such reaction will be found, remains to be seen.

These words are not intended to repress the enthusiastic, *competent, discriminating* porcelain worker, but rather to sound a note of warning to the indiscriminate, who advocates the use of that material under all conditions in preference to others at our command.

In no other department of dentistry is there such an exaction for absolute perfection in every detail as in porcelain inlay-work. A failure in any part of the process usually ends in failure of the whole. From "start to finish" it demands the highest skill, the most delicate manipulation and consummate judgment. It is not work for the bungler nor for the thoughtless.

A porcelain inlay becomes a creation of art *in selected cases* in which all the steps of the process have been carefully observed and the color accurately matched.

The technique of this process is so thoroughly understood by this time that it would seem useless in such a symposium to detail it here.

## SECURING THE MATRIX.

There are two methods of securing a matrix for this work, viz: The swaging and burnishing methods, and both have their adherents. I prefer the latter method, not because I have any strong prejudice against swaging, but for the reason that I can do it more accurately and in less time. I always use platinum 1-1000 fine, and consequently, a high fusing porcelain. The color is secured after fusing a foundation body by layers of enamel body upon which is fused a colorless, translucent enamel, modifying to a small degree the intensity of the colors that lie immediately under it. A cement is chosen to match as nearly as possible the dentine of the tooth, and after adjusting the dam the inlay is cemented to place and tied or wedged in position until the cement has hardened.

### INLAYS RESTRICTED TO THE ANTERIOR TEETH.

I have rarely extended these inlays posterior to the ten anterior teeth. I do not desire to measure another's ability by my inability, but I have never yet convinced myself that I could do as serviceable and lasting work in teeth posterior to the bicuspids with porcelain as I could with gold or a good alloy. To me, manipulation of a matrix in these regions is too uncertain for the accuracy that such work imposes, and I prefer the more definite results that are obtained by other filling materials.

### BURNISHING.

Many complain of the difficulty in securing a matrix by the burnishing method. This should not be a source of annoyance to the otherwise careful operator if the details are carefully observed.

Space is the first requisite in inlay work. A carefully burnished matrix may be distorted because of the lack of space in removing it from the cavity, and the resulting inlay is worthless. Having obtained space, place a piece of 1-1000 platinum of sufficient size to liberally cover the cavity and area contiguous; with a burnisher gently press a moistened pledget of cotton upon the platinum that covers the cavity. After the platinum has reached the walls of the cavity by this teasing process, grasp its free edges that are about the lingual and labial surfaces with the thumb and index finger of the disengaged hand and bend them to the surfaces of the tooth. A more vigorous burnishing may now be used until all parts of the cavity have been reached. At this stage the matrix should be removed and annealed. Replace the platinum and more carefully burnish in all parts of the cavity. Extreme care should be taken with reference to the margins, it being necessary that all folds and creases of platinum should be burnished out and clearly defined margins are traced upon the platinum. Remove and anneal again. In this third burnishing I am indebted to Dr. W. T. Reeves for a little trick to which, in my opinion, much of the success of the burnishing method is due. After replacing the matrix for the third time, a heavy piece of rubber dam of sufficient width to cover the tooth and of sufficient length to freely grasp without interference with the area of work, is placed over the matrix and drawn taut. This causes a fixation of the matrix. With a burnisher you can now go over its entire surface and margins without fear of displacement and with the certainty of forcing it into all parts of the cavity. It is needless to say caution should be exercised in removing the matrix to prevent distortion.

You are now ready for baking. With these precautions it is seldom necessary to do any further burnishing.

The matter of instrumentation is largely one of individual selection. Burnishers with a flat surface are to be preferred to the round.

### THE "SHADOW PROBLEM."

The method of obtaining color and reducing to a minimum the "shadow problem" is, as I understand, to be exploited in this symposium by another, and I shall dismiss this phase of the subject with slight comment. You may acquire skill in burnishing a matrix, preparing cavities and overcoming the physical peculiarities of porcelain body, but there still remains the esthetic touch of producing shades and varieties of shades that is the most perplexing part of all porcelain inlay work. Many conscientious and zealous workers have become disheartened when this step has been reached and have abandoned the work entirely because of their inability to reproduce shades. I commend to such the process as recommended by Dr. W. T. Reeves, for study and experimentation. I do not believe it can be taught except by self teaching. The first acquirement necessary is to teach one's self the varieties of shade to be seen in the natural tooth from neck to tip; the next to reproduce them by the process Dr. Reeves has worked out. Some master this early, some later—some never. I believe the cause of failure in the latter class is that there is no artistic sense, and possibly an inability to detect color. However this may be, the fact remains that the exact reproduction of shades *is the most difficult problem* in porcelain inlay work.

### CEMENT AS INLAY RETAINERS.

In the beginning of this article we sounded a note of warning against the indiscriminate use of porcelain. The chief cause of this utterance is because of our lack of knowledge of the behavior of cement in any given case. The only means of retention of an inlay is cement. Cements behave differently in different individuals' mouths. In some they dissolve rapidly, in others less so. The space occupied by cement necessary to retain an inlay is indeed small, but there is generally a washing out about the margins of the inlay shortly after it has been set, until a well defined space, that may be traced with an explorer is perceptible the entire periphery of the inlay. Dissolution of the inlay seems to cease after a certain point is reached and caries does not seem to attack the margins. What causes this apparent cessation of cement dissolution the chemist will have to tell us, but until we have looked at our work from a longer perspective, 'twere better to proceed cautiously, especially when we have tried friends whose reputations are above reproach.

Again, the same cement will act differently under different conditions. There is a difference that should be reckoned with in a freshly made cement and one that has the stamp of age upon it. There is a difference in the behavior of cements in a mouth whose fluids are neutral in reaction and one that is slightly acid.

Therefore, I consider that by reason of these difficulties and the lack of time in which to test the durability of porcelain inlay as a substitute for other fillings, I am justified in saying that we should proceed cautiously and with intelligent discrimination.

C. E. Bentley

# COLORS IN OIL—THEIR PRACTICAL APPLICATION IN PORCELAIN WORK.

BY ROBERT BREWSTER, CHICAGO, ILL.

There is no question but that the more intelligent portion of the community is rapidly becoming educated to the advantages of porcelain as a filling material. The extensive use of porcelain for restoring lost tooth structure is but of comparatively recent date; recent, as compared with the age of porcelain work in other directions.

In 1896 there was really no preparation of porcelain to be had, suitable for inlays and large restorations. The dentists of Chicago are largely responsible for the production of a reliable porcelain, and by their individual efforts have spread throughout the profession an enthusiasm in the work rarely accorded to any one line of operative procedure. The enthusiasm of the laity has, at least, kept pace with that of the profession, as it is becoming somewhat common practice (in Chicago, at any rate), to remove gold fillings from anterior teeth and refill with porcelain.

The more esthetic the community becomes, the greater will be the demand for porcelain in exposed positions, until, within but a short time, gold will be relegated to posterior teeth, and then only as gold inlays.

The advent of the "Foundation Body" and "Enamel Body," in 1897, did more to advance inlay-work and esthetic crown-work, than volumes of theory on "the relative advantages of porcelain over gold as a filling material" could possibly have accomplished. Theory, which is always in advance of practice, had, in this particular case, existed for years, and considerable work had been done, but, unfortunately, with low-fusing materials, much to the detriment of the art. It is quite true, as has been repeatedly stated, that the want of suitable porcelain retarded the development of inlay-work.

That stage is, however, now happily passed, and with increased knowledge and experience in the work, comes a demand for still further esthetic requirements. These will now be considered:

Foremost among the difficulties which present themselves to the practitioner, is the reproduction in porcelain of defects and stains, as found in the natural organs. Undoubtedly very beautiful work is accomplished with the Enamel Body, owing to its natural coloring and translucency, and especially when employed by the method advocated by Dr. Reeves; but there are cases when the aid of some very pronounced shade is needed as an underlying color in inlays. This effect is best obtained with primary colors in oil.

These high-fusing oil colors were first suggested by Dr. Reeves, who used them for painting on the backs of facings to increase the color of their cutting-edges. Since that time their value has been demonstrated in other banches of porcelain work, notably inlays, of which the following are examples.

We will take, for instance, a very translucent central with a mesial cavity extending from near the cervical border to within a short distance of the cutting-edge. A brown stain about the center—and which originally extended across the tooth—gives the tooth the appearance of being rather lighter in shade near the cervical than at the cutting-edge. This brown stain has to be carried into the inlay, as its abrupt termination at the margin of cavity would militate against the natural appearance of the work. The desired effect is accomplished by painting the proper tint of brown, at the point indicated, upon the "Foundation Body," and bake to a glaze; then cover the upper portion with a shade of Enamel Body which will correspond to that part of the tooth, and remainder of inlay with Enamel Body to agree in shade with the balance, as it approaches the cutting-edge.

The oil color being a pronounced and penetrating brown, is readily seen through the translucent covering of Enamel Body. White spots may be represented in inlays by painting the white oil color on, before applying the last coat of Enamel Body. The degree of intensity of the white is a matter of discretion, governed by the quantity used, and by the depth it lies below the surface.

In restoring the cutting-edge of an incisor (by the method described by Dr. Custer, and illustrated in *The Dental Cosmos* for November, 1902), it may be necessary to produce a blue line just immediately above the cutting edge. This is done by painting the blue line upon the Foundation Body, or upon the layer lying immediately below the final coat of Enamel Body. Usually, in teeth where this blue line is found, the No. 15, or white foundation, will be the best to use.

The blue color is also serviceable to increase that shade at the cutting-edge of a facing, which in every other respect may be suitable for the case in hand, but needs to be a darker blue. The facing should be ground on the back with a corundum wheel (not a carborundum), and the color applied in a thick layer. After baking, if the blue appears to be too intense, it may be reduced with the stone before applying the proper shade of Enamel Body.

The same method applies when using the brown, yellow, green, or, in fact, any of the colors, for changing the cutting-edge of facings.

In *overlaying*, that is, applying color to a practically finished surface, the object is to change the color of the outer surface of the teeth. For instance, we have an upper set of fourteen teeth; as purchased, the set presents a uniform color from centrals to molars. To be in accordance with nature, the laterals should be two or three shades darker than the centrals, and the cuspids three shades darker than the laterals. In making these changes, the *tone* of color is the important thing to observe. As a practical illustration of the process involved, we will take a set of fourteen teeth which agree in shade with, say, No. 5 on the Justi Shade Guide, and known as a yellow shade.

The *tone* of color pervading the upper half of this set will be reproduced by mixing equal parts of yellow and brown; the method of employing them is as follows: Place on one of the palettes an equal quantity of each color, sufficient in all to paint twelve teeth on their labial and buccal surfaces (the exact quantity of color can only be determined by experience), then drop from the pipette some of the prepared oil on to the palette and with the spatula incorporate thoroughly. It is important that the color and oil be worked thoroughly together until quite smooth and the colors perfectly mixed. The consistency of the color when mixed should be about that of cold glycerine or the fluid of a good oxyphosphate cement.

The color being now in the right condition, it must be applied to the tooth with a patting motion, not brushed on as one would apply color to canvas. In thus applying the color an evenness of surface is obtained and an extra thickness left at the neck, becoming thinner toward the center of the tooth. To obtain the blended effect found in a well-shaded tooth the color must be thinner as the cutting-edge is approached. To secure this effect dip the brush into the jar of oil of turpentine; with this oiled brush draw a little of the already mixed color to one side of the palette; the color thus thinned down will allow of its being applied in the thinnest possible film over the remainder of the tooth, even to the extreme cutting-edge if desired. Sufficient color should be applied to the two laterals to make them perceptibly darker than the centrals, and to the cuspids to make these still darker; the color on the cuspids should be brought nearer to their cutting-edges. The bicuspids and molars should be darkened to agree with the cuspids; the occlusal surfaces may be painted in the sulci with a brownish stain, and the ground cusps (if any), with a color which will restore their original appearance and smooth surface.

The colors fuse a little easier than the Enamel Body and will sink right into the surface upon which they are painted. A painted tooth will therefore retain its original smoothness of surface although deepened in shade. In consequence of their high-fusing point these colors are not effected by the oral secretions.

A perusal of Dr. Royce's paper *(Dental Review)* on "The Shades of Natural Teeth" is recommended in this connection.

The most difficult teeth to change are those with very little color in them, such, for instance, as No. 8 on the Justi Guide or No. 35, the corresponding color, on the White's Guide. The formula for the upper third of this tooth would be brown, two parts; yellow, one and one-half parts, and white, one part.

These colors must be thoroughly incorporated, as previously directed.

A simple method of arriving at these proportions is to make heaps of each color on the palette. After a little experience this method becomes sufficiently practical for all purposes, but if preferred each color may be weighed to a previously prepared table, and doubtless this plan will be adopted by many at first, to be afterward discarded as their artistic abilities develop.

The formula for darkening the upper part of a tooth the color of No. 48 on the White's Guide would be brown, three parts; yellow, one part; red, one part; black, a trace. This will give the *tone* of color desired; the intensity is governed by the thickness of the layer of color applied.

On entering this field of work it is a good plan to make up mixtures and paint on pieces of porcelain or old teeth, recording the proportions, and after baking, compare with teeth on the shade-guides, remembering always that in comparing a sample with the neck of a tooth—to ascertain whether the correct *tone* of color has been reached—that only the same amount of each must be exposed to view, otherwise the eye is liable to be deceived by the shading in the baked tooth.

The pink gum in the form of oil paint is much more convenient to use than a body mixed with water, is capable of more artistic effects, and adds nothing to the bulk of a case. With two shades of pink properly applied, monotony of color is avoided, resulting in a more natural effect.

With materials as now prepared, great opportunities are open to those desiring to excel in this department of dentistry.

# A METHOD FOR PORCELAIN BRIDGE-WORK.

BY GEORGE W. SCHWARTZ, M. D., D. D. S., CHICAGO.

Probably no branch of practical dentistry has held the attention of dentists, or has been the subject of more discussion with a record of such a great number of failures, as has porcelain dental art in the past decade, consequently a field has been open in which some valuable work could be done by men who have been willing to try to find the cause of failure and invent or devise methods whereby the probabilities of failure in the work would be reduced to as small or smaller percentage as is the case in all other dental practice done.

I am free to say I believe porcelain work has kept pace with the other departments of dentistry, and that porcelain work as it is being done at the present time by experienced men has as small a percentage of failures as any other work they do.

## THE PORCELAIN BRIDGE.

Before I proceed to describe the method I use to make a porcelain bridge, which is the purpose of this article, let me remind the beginner in porcelain dental art, his success will depend first on his good judgment, then on his ability to execute it. He must be methodical, and one who can carry the detail of the work to an exact fineness, there are no short cuts in the road to success with porcelain. Haste, slovenliness, lack of method, and a disregard for the detail of the work are a guarantee of failure from the beginning.

The first five years of my time spent in porcelain bridge-work had some troublesome wrecks, costing me more than one patient. I saw possibilities in the work though, and kept at it, following my convictions, with the result that the last five years I can count successful, more than repaying me for the loss on the first five years, and I can unhesitatingly say that porcelain dentistry is not a fad, but a necessity. Dentists no longer need to do the amount of educational work with their patients that was required a few years ago, as they are now beginning to ask for and demand porcelain of the dentist.

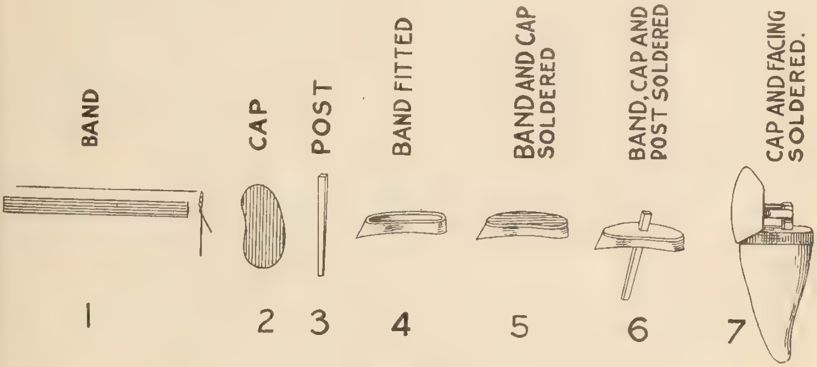
## A WORD OF CAUTION.

As far back as my writing and teaching of porcelain bridgework dates, I have said many cases were bridged with fixed pieces, both in gold and porcelain, where they should have been made removable, and I am still of that opinion.

The method that is soon to follow has been evolved from the early failures of myself as well as those of other men. By this method I have replaced all kinds of wrecked bridges, both in gold and in porcelain, with a satisfactory record for my patients, that has passed a sufficient number of years for me to recommend it, and if describing its detail of construction to the dental profession benefits one man, I shall feel repaid.

## METHOD OF CONSTRUCTION.

We will suppose this to be a lower bridge of four teeth extending from the first bicuspid to the second molar, presuming the roots to be sound and properly cared for, ready to be prepared for the bridge.



CUT I.

Cut the teeth off even with the gum line, remove all remaining enamel from the roots. A full bevel should be given the buccal margins of the roots the width the bands are to be (see Cut I, Fig. 1). This is for the purpose of covering the band with the facing when ground to place properly, that when the bridge is set the porcelain will bear the same relative position on the root of the tooth as the enamel did.

If you wish your porcelain work to be a success from an artistic and esthetic point of view, it is necessary to cover the bands buccally and labially with live-looking porcelain. To do this you must allow sufficient room for the facing, by giving the root a decided bevel. After the roots are properly ground and trimmed, continue by making the caps for the roots as follows: First, measurement of the root, then cut the metal for the band so it will be snug on the root when fitted on, solder the cap to the band and try on again, remove it and with a plate punch make a hole where the post is to go, with a small square file enlarge the hole until the square post fits tightly, replace the cap on the root and drive the post to place through the hole in the cap into the root, remove them and solder. If this has been carefully done the cap will come away firmly attached to the post and they can be soldered together without investing them.

Cut I, with figures 1 to 7, shows each progressive step in making the caps for the abutments of the bridge. The molar cap in this case is made by the same method exactly as the bicuspid cap is, and cut one will convey the idea for both caps. For a similar case use 29 gauge platinum for the band, 29 gauge iridio-platinum for the cap, and a large square iridio-platinum post. Solder all points with 25 per cent platinum solder.

The caps being completed put them in place on the roots, take a bite with them in place first, then a plaster impression is taken. Before removing the cast in the impression melt a small quantity of wax in the caps for this facilitates their removal from the model for soldering purposes afterwards.

Having the models made and the case articulated, see that the caps are easily removed from the model by taking them off and cleansing them of the wax. Take an impression with the caps in place on the model. Modelling composition will do for this purpose. This impression should bring the caps away from the model remaining in place in the impression, and a model run with investment material on which you will do some soldering. Take a wire measurement for the lower bar. This bar should extend from the post in the bicuspid to the post in the molar, following the gum line but not encroaching on the inter-proximate space. This is shown in Fig. 8.

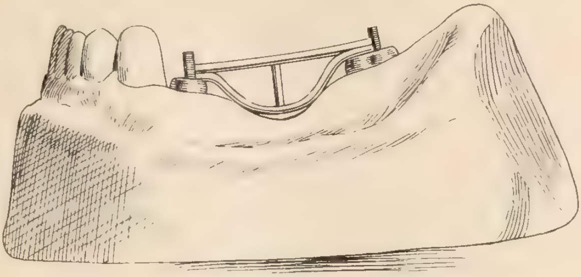


Fig. 8.

This bar should be made of heavy round iridio-platinum wire. Having the bar fitted in place, solder it to the caps and post; next fit the top bar in place and solder it, then put the upright piece in between the two bars and solder them together, all bars to be round iridio-platinum wire, and the soldering done with 25 per cent platinum solder..

This is as far as you should proceed before trying the metal frame work on the roots in the mouth. If the work has been done carefully it will go to place easily and fit. You can now replace the metal work on the plaster model, after it has been tried on in the mouth, and continue as shown in Fig. 9. This figure shows platinum backings have been soldered to the frame work to give support to the porcelain that is to be carved and baked. By this method porcelain bridges are safe. As yet I have the first one to see broken made in this way. It is a suggestion to the beginner to contour the form of

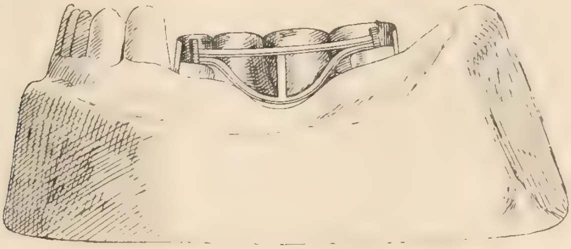


Fig. 9.

the backings in wax first, then run a die and counter die to swage them, after which solder them to place.

Follow this rule: *Divide the strength as equally as is possible between the roots of the teeth, the metal work, and the porcelain.* It is my opinion this method gives you the results of this rule.

You are now ready to grind and solder the facings to the metal work, which needs no description other than saying the facings should be varnished with shellac before they are invested, to prevent the investment from fusing to them while soldering with the oxyhydrogen blow-pipe and 25 per cent platinum solder.

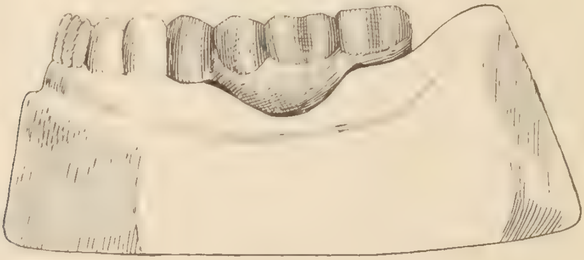


FIG. 10.

The bridge is now ready to be carved and baked by adding the porcelain body. The subject of carving and baking is such an extensive one it will not be taken up in this article. The finished bridge should have the appearance of Fig. 10.

### THE ARGUMENT.

By this method we get all the advantages, and have eliminated the disadvantages looked for when making porcelain bridges with saddles, and makes it possible to care for the inter-proximate space better by not encroaching upon it. When the bridge is set in cement it becomes easier to remove the excess cement from around the roots. With a saddle bridge it is not likely you will know you have removed all the cement and remaining cement often causes irritation at the inter-proximate space in saddle bridges. As the purpose of this article is only to describe a method, I will not give the reason why bridges should have their posts set in gutta-percha. I believe this method of making the metal work is stronger than saddle bridge-work, by reason of the soldered backings, to say nothing of the support given the added porcelain. In point of cleanliness it certainly is not surpassed. Often a bridge of this kind will be found claner than the natural teeth on the opposite side of the mouth.

George W. Schwartz

# THE MANIPULATION OF PORCELAIN BODIES, AS APPLIED TO CROWN AND BRIDGE-WORK.

BY HART J. GOSLEE, D. D. S., CHICAGO, ILL.

While *judicious application* is the first essential consideration incident to the practicability and possible success of porcelain work in any of its phases, this must be further supplemented, as applied particularly to the field of *crown and bridge-work,* by a careful observation and execution of the details of requirements in the preparation of the root; the construction and adaptation of the cap, and the subsequent attachment of the facing; and that portion of the procedure involving the manipulation of the "body" itself. Indeed, this latter phase of the subject is no less important than those preceding it, and the achievement of successful results will depend much upon the degree of skill exhibited therein.

That porcelain crown and bridge-work is *practical* when judiciously applied and skillfully constructed, and that such work approaches the highest possible esthetic requirements, is now quite readily granted by even those who were formerly most skeptical, and this is especially true of individual crown work, to the consideration of which this reference will be, in the main, devoted; although similar details are alike applicable to bridge work.

In the application of this class of work, however, it must be remembered that porcelain itself is a more or less friable substance, and as such its inherent and possible strength will quite naturally increase in proportion to its *bulk.* Yet, notwithstanding this fact, the degree of strength can be still further increased by skillful manipulation, or may be diminished accordingly.

In consequence, the occurrence of failures can invariably be attributed to injudicious application, or faulty construction and manipulation, either or both of which can be avoided, and should reflect upon the indifference or inexperience of the operator, rather than to cause a condemnation of the material.

When the conditions of occlusion are, or may be made, favorable, and the details of construction are skillfully executed, a porcelain crown possesses adequate strength to meet the requirements of the average case; and its possible integrity often exceeds that of any other style of crown.

To obtain this degree of strength, however, two features must be observed:

*First,*—The metal construction must be strong enough to afford sufficient means of attachment and support for the porcelain, and

*Second,*—The selection and manipulation of the "body" must be made with a view to obtaining the best possible results.

While it is not the purpose of this consideration of the subject to go into the details of the former, it would be quite impossible to secure the necessary requirements in connection with the latter, without briefly emphasizing those incident to the construction of the crown.

In this connection, the root should be cut shorter than for any other style of dowel crown, in order to make as much accommodation for the porcelain as possible. The band, if one is used, should be well adapted, narrow, heavy enough to retain its shape, and the ends should be overlapped if soldered with pure gold. The floor should be heavy enough to form a strong cap, and good contact between it and the band should exist. The dowel should be adequate to the requirements and always soldered to the cap. The facing should be selected and ground to comply with the requirements of color, size and shape, and the cervical end should be ground thin enough to overlap this portion of the band without causing undue prominence. This overlapping of the facing brings its end in close proximity with the gum, and affords mechanical means of retaining the porcelain, and results in the formation of a smooth flush joint. In attaching the facing to the cap, the pins should be bent *toward the porcelain*, so as to come in contact with the surplus end of the dowel at a point as close to the cap as possible, or in contact with the floor itself. An observation of such details admits of the removal of all surplus or unnecessary metal, allows more room for the subsequent application of the porcelain, and affords opportunity for securing the necessary or desired contour of the lingual portion of the crown without exposing the pins.

The soldering of the various parts may be done with 25 per cent. platinum solder, which imparts strength to the work by filling in spaces where the contact is not perfect, and making a joint which is not refused in the furnace during the baking of the crown. Pure gold, however, may also be used successfully, if the parts are *in absolute contact*, and sufficient heat is applied in soldering to thoroughly fuse it until all surplus becomes absorbed by, and alloyed with, the platinum.

When the soldering has been completed, any surplus ends of dowel or pins should be ground down, and all sharp angles rounded off with disks until smooth, as the body will not attach securely or fuse well over such places, but, on the contrary, will usually either fracture, or draw away from them, as a result of the shrinkage. After observing these requirements, the crown should then be thoroughly cleaned in 50 per cent. sulphuric acid, and all remaining traces of the same subsequently removed by washing freely with clean water.

If these essential features are closely observed, the details of procedure from this point to the completion of the crown will be greatly facilitated, and the opportunity for obtaining successful results increased in proportion; but the work must be done with scrupulous care, and extreme cleanliness is very important.

### SELECTION OF BODY.

While many classes and grades of porcelain "body" are used and advocated, the best results are doubtless to be obtained from those which are prepared in *one grade;* finely powdered to admit of carving, and which belong to the *high-fusing* variety, as innumerable tests with the pyrometer and for crushing strength seem to indicate conclusively that the maximum manipulative qualities, combined with strength and translucency, is secured in those which fuse between 2,200 degrees and 2,600 degrees F.

From a class of "bodies" possessing such qualities, a color as closely approaching that of the facing as possible should be selected with the shade ring, and a sufficient quantity of the corresponding body placed upon a clean glass or porcelain-mixing slab.

Pure, clean water, or alcohol, should now be added, and the mass *thoroughly mixed* with a spatula until it assumes the consistency of thick cream.

### APPLYING BODY.

The dowel of the crown should now be grasped securely in a slide pin-vise, and a small quantity of the body placed on the cap and forced into the joint between floor and facing. This may be accomplished by tapping with the carving instrument, or by drawing a coarsely-serrated instrument across the handle of the pin-vise, and should be continued until the body is *thoroughly packed* and the moisture brought to the surface.

This packing is of great importance to the integrity of the porcelain, and materially overcomes the tendency to porosity. The moisture may be absorbed with a clean piece of linen, or cotton, or bibulous or blotting paper, and the procedure continued until the desired contour for the finished crown, with a slight surplus, is obtained.

The shape and contour may be more easily sustained by applying body mixed to a thicker consistency as the building-up progresses, and when the desired form has been obtained, the remaining moisture may be easily and quickly evaporated by passing the crown over a flame, until the mass is sufficiently dry to admit of carving. In this procedure, however, it should always be allowed to remain moist enough to cut and carve nicely without flaking or crumbling, and if too dry, should be again slightly moistened with a wet brush.

### VARIATIONS OF SHADE.

Variations in shading may be obtained by selecting the two colors desired to produce such and mixing both separately. The one forming the base of the crown should then be applied, as indicated, up to the point desired, when the other may be added without allowing the first to dry, and built up as required. Using both in this manner affords opportunity for blending them until splendid results are obtained, and very artistic work is possible, particularly where the base is yellow and the incisal or occlusal end blue, in any of their variations.

In building up bicuspids and molars, a narrow strip of blotting paper conformed to the outline of the lingual portion of the band acts as a matrix, and may be found to facilitate the work, though the use of such is scarcely necessary if the body is applied when mixed as thick as possible.

Very artistic results in shading are also possible by the use of Brewster's oil colors. These are prepared in eight basal colors, and are to be mixed with the accompanying oil to a thin consistency, applied with a small brush and fused.

Where it is desirable to produce a change in the color of the facing, these oil colors should be painted on the lingual surface at the desired point, then fused, after which the body may be applied as indicated. In producing a change in the body of the crown, it should be applied to the surface of the porcelain after the first baking, then fused, and the final contouring made with body, the transparency of which, if not too thickly applied, will admit of a splendid result.

In coloring grooves and sulci, these should be thinly painted in the desired places, after the crown has been completed, and then fused.

## CARVING.

If the body is not *too* dry, the procedure incident to carving the porcelain is quite simple, but the artistic results possible will depend much upon the knowledge possessed by the operator of the form and outline of the individual teeth.

This may be easily acquired by a study of natural teeth and a good plaster model of a full typical arch will serve as a guide in the work.

Anatomically correct outlines are not necessary, and the aim should be simply to typify the cusps of the crown so as to distinguish between the right and the left, the upper and lower, and to meet the requirements of occlusion and contact with the adjacent teeth.

To admit of the latter, the crown should be tried on the model during the process of carving, and trimmed to meet such requirements, and in order to prevent flaking the body or changing its given form it may be *slightly* and cautiously moistened with a wet brush previous to such trials.

In this connection, it is always necessary to have a model upon which the crown may be easily adjusted to place, and this may be obtained and facilitated by taking an accurate bite and impression, and filling the interior of the cap with melted wax previous to running the impression. When the model is secured, the presence of the wax will admit of detaching the cap with ease, and in a manner which will also readily admit of its accurate readjustment.

In carving, the body should not be allowed to overlap upon the band at any place except along the labial or buccal edge, where the facing mechanically retains it, as such overlapped surfaces or porcelain will usually present fractures, or may even break off, leaving a rough and irregular joint with the platinum.

Owing to the shrinkage, a slight surplus must always be allowed, but the exact amount can only be ascertained by a familiarity with the characteristics of the body used, as they all vary somewhat in such properties.

When the desired conformation and outlines of the porcelain, and blending of the colors, has been obtained, the crown should be placed in the furace and baked until it becomes slightly vitrified, but does not present a highly glazed surface.

This is preferable to the so-called and usually advocated *biscuit bake,* because of securing a maximum degree of shrinkage in the first fusing, but the surface should not be vitreous, for the reason that the second application of the body will not adhere to it so well.

When the crown has been so baked, it should be allowed to cool, again adjusted to the pin-vise and thin, well-mixed porcelain applied until the former contour, which has been reduced by the shrinkage, is restored, when it should be again fused, this time to the desired vitrification.

At least two bakes are always indicated for this reason, but more than two is seldom necessary, when these details have been carefully observed, and previous to placing the crown in the furnace all particles of body which remain deposited on the surface of the facing, or band, should be removed with a soft brush, to prevent their becoming attached thereto.

## FUSING.

When the crown is ready for the furnace, it should be placed on a fire-clay support which will accommodate the dowel; allow the cap to rest firmly and evenly upon its surface, and sustain it in as nearly a perpendicular position as possible.

Platinum trays are sometimes used for this purpose, but are objectionable, because of the not infrequent attachment of the crown to them. This may be caused by the refusion of a surplus of pure gold solder, or by the excess porcelain, and is precluded in the use of fire-clay. Such supports may be made of fire-clay, or can be procured in various designs of practically indestructible material from Dr. R. C. Brophy, of Chicago.

It should be observed that the dowel does not extend entirely through the support, so as to bring its end in contact with the floor of the muffle, and that, when adjusted in the furnace, its incisal or occlusal end will not touch the dome, as such contact in either instance will usually result in a fracture of the facing. The object of its being held in a perpendicular position in the furnace, when possible, is to avoid the change of form which would be occasioned by the influence of gravity, if it is over-fused to the slightest extent.

When these precautions have been observed, the crown should be placed near the opening of the heated muffle and allowed to *dry thoroughly* before being carried inside.

In this connection, it is expedient to start the furnace at the time the building and carving of the body is commenced, in order that the muffle may be heated when the crown is ready to be baked, as thus much time is saved.

In placing the crown in the furnace, it should be placed as nearly in the center of the muffle as possible, or in the location where there are the greatest number of heat units; and as this varies to a considerable extent, it is not advisable to bake more than one or two crowns at a time in small furnaces, in order that each may be uniformly and evenly baked; and the surface of the porcelain body itself should always present toward the opening of the furnace, so that it may be observed while fusing.

The fusing of the porcelain may be quite easily accomplished without gold or time tests by simply watching it closely with the eye, and observing when the somewhat granular surface changes under the heat, and gradually becomes smooth and vitreous, and the furnace may be opened for this purpose with impunity.

The use of a pellet, or flattened globule, of pure gold placed close to the crown will indicate the beginning of vitrification when it fuses, and becomes spherical in form, but from this point on to a complete vitrification no tests or guides are accurate, because of the variation of the heat, the application or generation of which is not always the same in the same furnace, be it electric, gasoline or gas.

The individual fusing of several small cubes of body at different convenient times will enable anyone to acquire the degree of experience and familiarity with its characteristics, as it fuses, so that this can be done with accuracy, and any possible danger of impairing the eyesight may be overcome by the use of smoked or colored glasses.

When the desired point of fusion has been reached, the heat should be shut off immediately, and the crown allowed to cool gradually, when it may be removed from the furnace.

Porosity of the body is one of the chief causes of failure in this work, and is due to one of three causes: *Imperfectly packing* in applying it; *using too much pure gold* in soldering or *over-fusing* it.

There is no excuse for the former, and an excess of pure gold, which occupies space and subsequently leaves a vacuum in the body of the porcelain when it becomes fused in the furnace and absorbed by the platinum, can be avoided by being *properly fused in the first place,* while soldering.

Over-fusing of the body will not occur if it is watched closely during the time it is in the furnace, and this is extremely essential to the success of the finished crown, because over-fusing dissipates the color and destroys the integrity of the material.

When properly baked, the exposed edge of the platinum band should be polished with disks, and the crown then tried to place and mounted, and the result will be all that is required, or could be expected.

H. J. Goslee.

# SUGGESTIONS ON PORCELAIN CROWN WORK.

BY C. A. HAWLEY, D. D. S., COLUMBUS, O.

In offering these suggestions on porcelain crown work, I take it for granted that the following propositions are so well established as to need no further argument:

1st. That the natural tooth color of an all porcelain is superior to that of any metal-backed crown.

2nd. That the adaptation to the root of a porcelain crown made by the operator is superior to that obtained in those ready made, as the Logan, Davis, etc.

3rd. That in the selection of tooth shades and moulds, the above first named crown has great advantages, the latter class having a selection of about forty moulds, the former five hundred to one thousand.

4th. That there is a great advantage in the stiff iridio-platinum over the soft platinum pin of the Logan crown.

5th. That the cleansing properties of porcelain are superior to those of any metal used in the mouth.

Thus in the all-porcelain crown made by the operator we have these advantages: a natural color or translucency, perfect adaptation to the root, wide range of selection in facings, stiff iridio-platinum pin that will not bend and split the root, and a perfect cleansing surface.

The ordinary procedures followed in making porcelain crowns have been so often described that I wish merely to mention two or three special methods for particular cases.

Some cases indicate and some operators use only a full platinum band and cap over the end of the root and some use only a plate of platinum. In a single crown not attached to bridge work all the ordinary force to dislodge it is exerted from the lower teeth in an upward and outward direction. This tends to lift the crown from the root on the lingual, and press it to it on the labial side. Recognizing this fact, it has been a custom of many after making a full cap to cut the band away on the labial and the labial half of the mesial and distal sides to obtain more artistic appearance. For some years in selected cases I have used the following method of making these half caps and which I have found both expeditious and productive of the best results.

The root having been properly trimmed and the canal prepared for the post, take a piece of square iridio-platinum wire, preferably fourteen gauge, for centrals and cuspids, and fifteen gauge for laterals, and fit it tightly in the root. Take a sharp instrument and mark it just where it emerges from the canal.

At this point melt on the post a small piece of platinum solder or pure gold. Cut a disk of platinum plate thirty-three gauge a little larger than the face of the root and drive the post through the center, passing it up to the point marked and where the solder is flowed. Place in the blowpipe flame and solder. Put the pin in the root and burnish and mallet the disk over its face. Cut the disk to the exact edge of the root on the labial and the labial half of the mesial and distal sides. The plate should be large enough to extend over the lingual side to the extent that you wish the width of the lingual band. With a mallet or burnisher the outline of the root can be marked on the plate. The post is now removed and with a pair of smooth, narrow-beaked pliers the platinum can be turned down at right angles to form the band. By proper manipulation, platinum can be turned at a sharp angle and worked to a smooth band. The edges should then be trimmed smooth and the piece placed again in position and the band burnished carefully to the root. If properly done we will now have a half cap covering the lingual side of the root and a plate accurately adapted to the labial side (Fig I), made more quickly and with much less laceration of the tissues and consequent pain to the patient than the ordinary method. The crown can now be finished in the usual way.

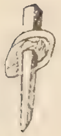


Fig. I

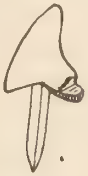


Fig. II.

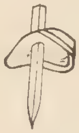


Fig III.

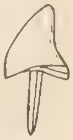


Fig IV.

Annoying cases are sometimes found where the gum is deeply arched on the labial and lingual sides. Porcelain to be strong should not be carried to a thin edge, so a root should be as flat as possible. Yet the chronic inflammation that follows when a root is cut deep into the attachment of the gum on the mesial and distal sides to obtain that form is not to be desired. If the root is cut just below the gum on the mesial and distal sides and there beveled from the lingual side of the root canal to a point under the gum on the labial and to the gum on the lingual, and a porcelain crown made the porcelain is likely to fracture from the lingual side and we have a result shown in Fig. 2.

This result may be avoided by soldering to the back of the cap a crescent shaped piece of platinum cut from 28 gauge plate extending across the lingual and half way up the mesial and distal sides (Figs. 3 and 4). The addition of this piece forms a pocket, for the porcelain permits a square edge, also stiffens and improves the turned band and I have come to use it in almost every case. In bicuspids it may be left much higher and I think strengthens the lingual cusp much better than a pin soldered to the cap and extending into cusp as recommended by one author. Another difficulty experienced in some cases is found where the extension of the dowel in so near the labial edge that the facing will not go on without grinding deeply between the pins, thus greatly endangering the facing by splitting. In this case reduce the facing to a veneer by grinding out the pins entirely. Bake a mass of porcelain body over the pin and lingual portion of the cap, cutting it away on the labial side. (Fig. 6.) Now place the cap in position in the mouth on the root or on the model, if working on a model, and with a little wet body on the labial part of the cap and the mass of body already baked around the pin, stick the veneer in place tapping gently to exactly the proper position. Remove very carefully by grasping the back part with pliers, and bake. For this baking the piece must be dried very slowly. The facing will now be established in place (Fig. 7) and the crown can

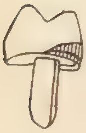


Fig. V.

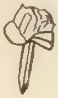


Fig. VI.

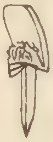


Fig. VII.

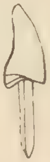


Fig VIII

be contoured and finished in the usual way. (Fig 8.) For the first two bakings establishing the facing I have found Brewster's foundation body most satisfactory, owing to its peculiar consistency, finishing with the enamel body. By this method the facing can be placed in proper position without the bulging labially so often seen in porcelain crowns improperly made. The pin baked into the body of the crown has proven amply strong.

C. A. Hawley

## PORCELAIN DENTAL ART—PORCELAIN JACKET CROWNS.

BY DR. G. W. COCHRAN, ERIE, PA.

In the writer's opinion porcelain has come to stay as the best and most artistic tooth preserver extant. A great many practitioners are extremely skeptical as to this just as many of the profession were many years ago regarding the practicability of bridge-work, but where can the thoroughly up-to-date progressive dentist be found to-day that does not recommend properly constructed bridges in preference to partial dentures on vulcanite or metal?

Porcelain dental art is being demanded by people of refinement and esthetic taste. It is scarcely more than a decade since bridge-work, gold crowns and open face gold crowns were launched upon the sea of dentaldom and raged with the fury of a western tornado, and for several years, many mouths were and even to the present time, are being disfigured with too much gold conspicuously displayed on the anterior teeth.

### FADS.

But like all other fads, gold crowns on the anterior teeth have had their time and are gradually giving way to a class of dentistry more refined and elevating. It has been quite apparent in recent years to the progressive dentist, that this onslaught of public opinion against the exposure of so much gold on the anterior teeth, is being abhorred and is absolutely revolting to many people of refinement and esthetic taste. It is so in my practice, and I am sure every practitioner who caters to the esthetic taste of his patrons, hears the same objections against gold.

That class of dentistry that openly exposes so much glare of gold to the casual observer, is fast assuming a retrograde movement that will retire large gold plugs, gold crowns, open-face gold jackets and bridges, exposing so much yellow metal, to a rear seat in the stage of progressive dentistry.

### THE WAY OUT OF IT.

In porcelain jackets, porcelain bridges and inlay fillings of porcelain, the dental profession, (or at least those sufficiently skilled in the art) have a most happy and thoroughly practical substitute to offer their patrons in lieu of gold. For badly broken-down crowns of the anterior teeth, nothing in the opinion of the writer has ever approached the porcelain jacket, conceived and presented to the profession by Dr. C. H. Land, of Detroit, Mich. Inlay plugs of properly shaded porcelain, are certainly preferable to large gold or plastic fillings.

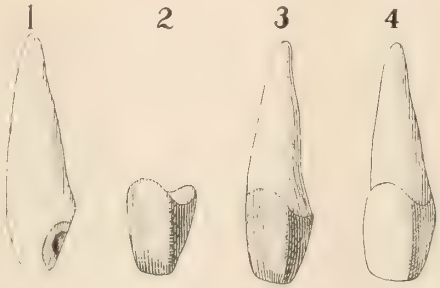
By the application of porcelain dental art we relieve our patrons of the great unpleasantness of being stared at when in society or upon the high-ways, by their friends or associates, to ascertain whether their gold teeth are 14-16-18-20 or 22-k fine. The reader will better grasp the real meaning of the paragraph, when he considers that gold teeth range in price from $3.00 to $25.00.

### DURABILITY OF PORCELAIN WORK.

The writer has attained to that degree of proficiency in porcelain art, that he has no hesitancy in saying that he considers porcelain jackets, porcelain bridges, and inlay fillings of porcelain, when properly constructed, just as durable as gold crowns, gold bridge, gold and plastic fillings. He has thoroughly satisfied himself after an experience of some twelve years in this, to many a rather new departure in dentistry, that porcelain in its varied applications is superior to many materials now used by the profession, and in teeth of poor structure supplants them all for durability and artistic effects. He considers the porcelain jacket superior to any other form of crown for the anterior teeth, when crowning is required. In making this assertion he makes no exceptions.

### PORCELAIN JACKETS—HOW CONSTRUCTED.

No cutting off of the tooth-crown at gum line is required for porcelain jackets. Shape the tooth as if it were to be crowned with a shell crown of gold. (See Fig. 1.)



TOOTH METAL SHELL SHELL IN POSITION ON TOOTH PORCELAIN CROWN IN POSITION ON TOOTH

*First*—Properly shape the remaining portion of the tooth crown and especially the cervical portion. All that are familiar with correctness in this procedure realize the great importance of a jacket, gold crown or any ferruled crown of whatever description fitting the tooth accurately at the cervical margin. Avoid impinging upon the peridental membrane. Nature will not stand for too much pinching, and will take care of itself by resorption and recession of gum tissue where improperly made crowns are adjusted.

*Second*—The tooth being shaped in accordance with the operator's ideas of correctness, a wire measurement is taken and a platinum ferrule of 36 gauge made and conformed to the tooth, pure gold being used sparingly for solder. (See Fig. 2

and 3.) After the platinum is conformed to the proper shape, (always keeping in mind the thickness of veneer and porcelain to be added) the surface of the platinum is roughened with a serrated instrument and a thin layer of high fusing porcelain is applied and given a biscuit bake.

The veneer which has been selected the proper shade, is ground to fit the biscuited surface and fused to place by the addition of more porcelain to the approximal and palatine or lingual surfaces. When completed the crown is set as any shell crown and has the appearance shown in Fig. 4.

All porcelains should be allowed to cool down gradually in the furnace. A great many wonder why their porcelains are so brittle, it is generally due to removing too suddenly from the muffle.

I find the S. S. White's new twenty-five standard shade porcelains fill the requirements of all cases perfectly. I mix the powder with distilled water as stiff as can be manipulated. Porcelain powder when properly treated can be trimmed the same as a plaster tooth. The only things to be avoided in working porcelain are moisture and impurities. All moisture must be eliminated before attempting to fuse, or you will have the very great pleasure of seeing your piece of work wrecked by steam. A little experience will remind one that this drying out process is imperative. I experience no difficulty in fusing the high grade porcelain in from 3 to 5 min. according to bulk.

### NITRATE OF SILVER APPLIED TO THE PREPARED TOOTH.

For years it has been my custom in crowning teeth, to invariably treat the tooth to be crowned whether containing a dead or live pulp, with a strong solution of nitrate of silver, which in my experience practically makes the tooth immune against subsequent attacks of decay in cases where the cement disintegrates.

The nitrate of silver turns the tooth black but the discoloration causes no one any annoyance so long as it is covered and out of sight. I have investigated recently, teeth treated in this manner and crowned for bridge-work ten years ago and found them in a perfect state of preservation. The teeth were jet black to be sure above gum line, but the silver discoloration is very superficial. I have no hesitancy in placing jackets on teeth containing live pulps (full exposure excepted) treated in this manner. The nitrate of silver prevents any possibility of cement action and thermal changes upon the pulp.

### BODIES AND FURNACES.

High fusing bodies are the strongest and the colors do not burn out so much in fusing and refusing. I find all the American high fusing porcelains about the same, but cannot recommend the present English preparations as the colors will not stand the fire required for proper fusing.

Gas and gasoline furnaces will fuse the best grades of porcelain just as perfectly as electric furnaces, though the electric furnaces are preferable where the current can be had.

I have been using a Downie gas furnace for the past twelve years, and can produce as good results as any electric furnace on the market to-day.

The Land & Downie gas furnaces and the Turner gasoline furnaces are the best for dentists who do not have the electric current in their office.

We have been reading so much the past few years about porcelain work in our dental magazines, that it would seem that most every progressive dentist is surely quite familiar with the art, and I will not burden the reader's time upon the subject of inlays except to say that I consider porcelain inlays easier to make and insert than the construction of a porcelain jacket when perfect harmony of shade is produced.

Fully realizing this issue of The Summary is to be strictly a porcelain art number and also cognizant of the fact that there are others much better prepared to give broader views covering the field of porcelain dental art, I will conclude my article by relating a little incident for the benefit of the weary toilers in well doing:

Some twelve years ago I purchased a Downie furnace and embarked in the practical application of porcelain art. At the same time, some half dozen of the furnaces were sold to other dentists in the community at that time and doubtless all who purchased made an effort to master the art, but for some cause or other, the vast majority pronounced porcelain work a failure and unloaded their outfits for whatever they could get and some of those same dentists are at sea to-day wondering how a select few should succeed and the majority be side-tracked. The moral I wish to convey from this incident is this:

No one can successfully master porcelain dental art by confining his practice to reading magazine articles. Invest in an outfit and work out your own salvation. There is a certain amount of art connected with porcelain work that no magazine article can satisfactorily explain to the uninitiated any more than an experienced artist that produces a $10,000.00 painting can convey his artistic run of thought to the novice.

To new beginners, as well as those that have been up against it and failed, I would say, do not get discouraged if your first production of a jacket, porcelain bridge, or inlay should not be in accordane with your ideas of harmony and correctness.

There are others that doubtless were extremely shaky when they first launched in porcelain work, that are to-day out upon the broad sea of porcelain dental art and enjoying a most successful and eminently satisfactory career.

With a furnace and a fair degree of intelligence and perseverance, any progressive dentist should be able to master porcelain work and apply it successfully in the mouth.

E. J. Cochran

# SUGGESTIONS

## IMPRESSIONS WITH OXYPHOSPHATE.

**George Evans, New York.**

An accurate and successful method of taking an impression for inlays is by the use of oxyphosphate. This is done by dusting the cavity with pulverized soapstone, and then inserting a pellet of quick-setting oxyphosphate, which extends over the edges of the cavity. When set, remove and make a mould of the same material. The surface of the impression should be dusted with soapstone to prevent adhesion of the oxyphosphate that is used to form the mold.—*Extract Cosmos.*

## IMPORTANT SUGGESTIONS.

In building the body for porcelain inlays be particular and not allow any of the porcelain material to overlap the margins of the matrix. Keep it smoothed back by means of a small brush dampened in distilled water. Distilled water is preferable to alcohol for mixing the porcelain material as alcohol evaporates too rapidly. If the finished inlay needs grinding to conform to the shape of the tooth, always re-enamel and bake before setting, as a finely-glazed surface is essential to retain the shade of the inlay and prevent accumulations adhering. Be careful not to overbake the porcelain. Always thoroughly test your furnace and note the degree of heat and time required for the proper bake of the kind of body you are going to employ, before you begin practical work. After thus testing, use the same heat and time, where the electric current is constant, for subsequent work would you obtain uniformly good results. Look carefully after all the small details. You cannot neglect or carelessly perform any part of porcelain work and get satisfactory results.

## A ROUGHENED BASE ON PORCELAIN INLAYS.

**J. S. Bridges, Chicago.**

Place an extremely thin layer of very coarse high fusing body over the floor and nearly to the margins of the matrix. This spread must be of much higher fusing porcelain than contained in the body of the inlay. Bake to a *slight* bisque. If the other porcelains are handled correctly the result will be a nicely-granulated surface on the base, which is especially applicable to small and shallow cervical restorations, where the staying qualities are difficult to obtain.—*Review.*

## PLENTY OF SPACE NECESSARY FOR INLAY WORK.

**W. A. Capon, Philadelphia.**

Plenty of space is imperative if filling between the teeth, for, unlike other fillings, they are finished before inserting, and being of a brittle, unyielding substance, there is danger of breaking if forced where the space is insufficient. The use of a Perry or Ivory separator will assist very materially in many instances.—*Extract Items.*

## CEMENTING THE INLAY.

**W. A. Capon, Philadelphia.**

Try to use a shade of cement as near the tooth color as possible and mix thin, otherwise it may pack and keep the filling from going in place. If this should occur, withdraw it quickly and commence again. When set, dry with hot air and cover with paraffin, rubber or sandarac varnish. Leave the dressing of the edges till thoroughly hardened.—*Extract Items.*

## ESSENTIAL POINTS IN THE MAKING OF INLAYS.

**W. I. Brigham, South Framingham, Mass.**

There are three essential points in a perfect inlay: the color, the fit and the bake. If any one of these is not perfect the filling is spoiled as a work of art. Much has been said about the deteriorating of the cement holding the inlay. It is, to my mind, like gluing two boards together. If you have a perfect joint there is almost no glue, and the same is true of an inlay, I have a method which, so far as I know, is original. For instance, if it is an incisor, I make an undercut channel along the under side, running from the cervical wall to the cutting edge; the cement enters this channel and the filling is firmly locked in place. I have never had one come out.—*Extract Items.*

## OBTAINING AN ACCURATE MATRIX IN DIFFICULT CAVITIES.

**Dr. Stoddard.**

There are a few cases where inlays are advisable, where the cavity is at the cervical margin of the tooth and extends under the gum to a greater or less extent. In these cases I think it is impossible to take a proper impression with a gold matrix, as suggested by Dr. Jenkins. In this case I think one can best get an impression by means of a pellet of gutta-percha packed into the cavity, just as in filling, except the cavity should be still moist, leaving the surface rough, and then forcing it in with a pencil of modelling compound. I have been able to take some very accurate impressions in that way. I case the impression with a small bit of oxide of zinc, mixed up to about the consistency of thick cream, or a little thicker, and then set it aside; and after it has hardened I set it in plaster, so that I have a plaster matrix with the cement impression on it. Then I remove the gutta percha and make a gold matrix. The advantage of this method is that it pushes the gum back, and it is possible to get a more accurate impression than with the gold alone, and then I proceed in just the same manner that Dr. Jenkins does.—*Extract International.*

## PORCELAIN INLAYS IN DEEP CAVITIES.

**W. T. Reeves, Chicago.**

In those extensive cavities where decay has so encroached upon the pulp that its death would almost surely follow if the tooth were filled with a metallic filling, although the cavity be lined with the best non-conductor you know of, porcelain will give one almost absolute security; the pulp will remain alive and the tooth comfortable. Clinical experience has taught us that porcelain is the best non-conductor of thermal changes, and practically restores the tooth to as nearly normal a condition as though decay had never occurred.

## DURABILITY OF PORCELAIN FILLINGS.

**W. S. Capon, Philadelphia.**

To reiterate what I have contended for years and what must now be accepted, porcelain fillings do not fall out through deterioration of cement; they improve with age and they are the best of non-conductors. They are held by tenacity of cement, and undercuts in cavities are not necessary, but an undercut in the porcelain is imperative. It is the strongest and most durable filling for poor teeth, and the limit of its possibilities is regulated by the experience of the operator. It saves time and health and is most desirable to the majority of patients, and, as one of my lady patients in poor health recently said, "It is delightfully restful." Rubber dam is always unpleasant, and with some people it is positively unbearable; with this work the use of it is reduced to rare occasions. If by accident or improper preparation a filling becomes loose, it may be replaced with little trouble, even after it has been in use for many years, and a close examination will find the cavity perfectly clean with a hardened wall of dentine. In conclusion, let me ask the prejudiced ones if porcelain has not a right to be placed on the list with the other permanent filling materials, and those who practice this work earned the privilege of being considered at least fair dentists if they do save teeth outside of old prescribed methods.

To the unbiased I would ask a fair consideration, as the practice of porcelain does not interfere with the saving of teeth otherwise, and is a grand assistant. To those who are favorably impressed and are endeavoring to help with the good work, I will ask of them a continuance of their efforts with the precaution to be careful and not too enthusiastic, so that in time our records will be such that we may have undisputed position in the special work of dental ceramics.—*Extract Items.*

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## MUST LEARN PORCELAIN WORK THOROUGHLY TO BE SUCCESSFUL.

**P. W. Evans, Washington, D. C.**

It cannot be taken up lightly and a cursory knowledge *only* obtained of how to make a porcelain filling, if you have any care for your own success. You will have failure in your experiments; yes, but you cannot afford to have failures in your every day work with it (or you will do yourself much more harm than good); and that you are bound to have failures, and constant ones, unless you have given enough study, time and labor to acquire a proper working knowledge you will soon discover. A porcelain filling, restoration, or inlay, to be a success must be *perfect.* It cannot be slovenly or carelessly done; if so, it will be hideous and damaging rather than beautiful and artistic.—*Extract Cosmos.*

## APPEARANCE OF INLAYS IMPROVED BY AGE.

**W. S. Capon, Philadelphia.**

Time and again I have put in inlays that were simply perfect until the cement was laid in, and then I did not think so highly of them; but six months or a year afterwards the same work has shown the best results. It has been the experience of all operating this work that time improves the matching of the inlay with the tooth.

## QUICK METHOD OF REPAIRING BROKEN PORCELAIN TEETH.

**D. J. McMillan, Kansas City, Mo.**

In building onto a crown, in the case of a crown that is broken, or a continuous gum case which is broken, or anything, if you have the pieces, there is no trouble in the world to mend them; but if you have lost the pieces, it is troublesome. For instance, if you have a continuous gum case and you break a tooth off of it or break it in any way, if you have the pieces, you have nothing to do in the world but stick the pieces back with silex; put it in your furnace and it can be mended in a few minutes.—*Extract Western Dental Journal.*

## HOW TO AVOID CONTRACTION OF INLAY MATRIX.

**P. W. Evans, Washington, D. C.**

Porcelain always shrinks toward its greatest bulk, and therefore we may often lessen the danger of contraction of our matrix (the name given the material forming an impression of the cavity, in which the porcelain is baked) by making a cross or hole in the center of the "body." This will cause it to spread, in the biscuit bake, toward the margins, instead of toward the center. In the final baking the porcelain is brought to the point of fusing and has the gloss characteristic of artificial teeth. The time of fusing an ordinary size filling varies from twenty seconds to three minutes, according to the kind of furnace used and the character of the "body." All these points may be thoroughly gone over and understood in the laboratory as a preliminary training. Simple cavities in teeth out of the mouth may also help the beginner.—*Extract Cosmos.*

## BUILDING OF THE PORCELAIN INLAY BODY.

**H. B. Tileston, Louisville, Ky.**

In building out contours, it is best to add an excess of body and then carve accurately to the desired form, providing a slight excess for shrinkage, rather than to bake on an excess of material with the expectation of grinding down after the inlay is set, as this endangers the friable margins, which are very liable to be chipped and thus ruin what might at first have been a perfect fit.—*Extract Cosmos.*

## CAVITY PREPARATION FOR PORCELAIN INLAYS.

**P. W. Evans, Washington, D. C.**

Generally speaking, in the *preparation* of the *cavity* it must be free from any undercuts that would prevent the withdrawal of the matrix, the walls must be perpendicular or nearly so, avoiding all beveled margins, and the edges, the importance of which cannot be magnified, must be square, sharp, well-defined, and absolutely true. Remember always, where any strain is to be brought upon it, that porcelain is "strong in proportion to its size," and an inlay or a filling with the slightest frail margin will prove defective.—*Exrtact Cosmos.*

## PORCELAIN INLAYS FOR MOLARS.

**W. S. Capon, Philadelphia.**

Putting porcelain in molars I term dangerous practice, because of its use indiscriminately in these teeth has done more to discourage beginners than in any other portion of the mouth.

Yet under a few circumstances porcelain may be used to advantage; but in no case has its durability been equal to that which has been shown in other teeth. The first objection is the difficulty in procuring sufficient space to obtain a correct mould of the cavity, and even when there are such opportunities, there is still the difficulty in holding the metal rigid until a perfect outline is secured. Succeeding in this there is still some uncertainty, as large surfaces in being fused, frequently change form sufficient to cause a poor joint, which is a weak spot through loss of cement with wear and wash. I have been successful in making some very fair molar fillings and they have stood the wear for a number of years, but upon close observation I notice that the joints seem a trifle larger, which is caused by the constant pressure in mastication, breaking particles off the edges.—*Extract Items.*

## POINTS TO BE AVOIDED IN MAKING IRREGULAR-SHAPED INLAYS.

Don't make undercuts in a cavity before taking the impression. Don't use common plaster of Paris for the mould; use only the best. Don't mix salt or any other foreign substance in the plaster to hasten the setting. Don't over-fire an inlay. Don't cement an inlay in position without serrating the back. Don't grind the surface of an inlay. Don't insert a badly fitting inlay or an inlay of bad color.—*Ash's Quarterly.*

## INLAYS PREFERABLE TO LARGE GOLD FILLINGS FOR YOUNG PATIENTS.

**C. N. Johnson, Chicago.**

The insertion of large gold fillings is frequently contraindicated on account of the nervous tax on young patients. The difficulty can be better overcome by the judicious use of inlays than by any other means at our present disposal..

It is the cutting of angles and grooves in the deeper parts of the cavity, necessary in preparing for foil fillings, which causes the major amount of pain, and which is avoided with inlay work. A large inlay is more easily made than a small one. There is no prolonged tension on the patient in inlay work as there is in malleting a large filling, and this greatly lessens the dread of dental operations among young patients.—*Extract Dental Review.*

## DO NOT GRIND PORCELAIN INLAYS AFTER THEY ARE SET.

**W. T. Reeves, Chicago.**

I think it is a mistake to make inlays with the expectation of grinding them after they are set. In a few places, like trimming the cutting edges of inlays in anterior teeth, or the occlusal surfaces of inlays in molars and bicuspids, this could be done with a stone after setting, but those are the only places that I consider should be touched with a stone. If the necessity arises for altering the shape of your inlay it should be done previous to the stripping of the matrix and put in the furnace and glazed again.—*Extract Review.*

## CARE IN THE WORKING OF LOW FUSING BODIES.

**A. E. Morey, Chicago.**

The shrinkage in low fusing bodies is considerable—from about 15 to 33 per cent.—and so this body must be worked with great care. The tendency to globulate in shrinkage necessitates careful attention to previous bakings. These bodies are very brittle and of low density and the danger of rendering them porous through over-baking is very great. Yet when properly worked they have sufficient strength to resist all ordinary mastication. They ought never to be ground, as the highly glazed surface resists chemical disintegration, and I do not think there is any excuse for the porosity caused by uncleanliness in working, or through over-baking. These I believe to be the principal causes for bubbling and cracking. Of course all porcelains are porous in proportion to the completeness of the fusing of their ingredients. The fusing *must then* be very sharply watched in the lower fusing bodies. They bake at a moderate heat and passing that temperature renders them entirely valueless.—*Extract Dental Review.*

## CAUSE OF BUBBLES IN PORCELAIN.

**D. J. McMillan, Kansas City, Mo.**

The cause of bubbles in porcelain crown is overheating of the case. There are really two causes for it—bad packing of the case and overheating. If you get one, it is nearly impossible to do anything with it except to break the tooth up and make a new one.—*Extract Western Dental Journal.*

## MAKING A PLATINUM MATRIX WITH THE ASH SWAGER.

**S. W. Boles, Washington, D. C.**

The cavity is prepared in the usual way. After taking the impression with modeling compound, a plaster model is made, and with this model in the swager you can make as many matrices as you like, or, in case it is misshapen in the baking, it can be re-swaged without any trouble. This method has the advantage of saving trouble and pain to the patient, also enabling the operator to do his work in leisure time.—*Extract Cosmos.*

## SOME ADVANTAGES OF THE PORCELAIN FILLING.

**P. W. Evans, Washington, D. C.**

Porcelain is non-conductive. A sensitive cavity will tolerate it perfectly, and it can therefore be placed in many cavities where the pulp is in close proximity. The non-strain upon the tooth in its introduction is also a great advantage. There is more ease for the patient, less nervous strain and wear and tear, than is necessarily connected with the introduction of most gold fillings. Its durability, when the case is judiciously selected and the work perfectly done, is, although still questioned by some, proving itself more and more daily, and this, combined with its added esthetic advantage of color, makes it well worthy of a permanent place in our daily work.—*Extract Cosmos.*

## THINGS TO BE AVOIDED IN INLAY WORK.

**W. A. Capon, Philadelphia.**

I would advise against using the camel's hair brush in working porcelain body. I use a red sable brush, and find it much better adapted to this work. I would also advise against the use of wax or any kind of material in the making of the matrix. In removing it, no matter how careful you are to wash it out, there will naturally be a little residue, and in the baking of the porcelain this will interfere with the color very materially. Of course, in extensive work, it would not make such a difference, but in small cases it will certainly interfere with the color and also with the baking and texture of the material, therefore I would advise against its use under any circumstances except in large cases.—*Extract Cosmos.*

## PREPARATION OF INLAYS BEFORE SETTING.

**E. M. Fernandez, Chicago.**

Make the walls of the inlay slightly tapering, and remove with sandpaper disk the gloss from the parts of the inlay that fit into the cavity. You will then have, when cemented, an inlay flush with the surface of the tooth without grinding it, the cement ocupying the space which was filled with that which you removed with the sandpaper disk.—*Extract Dental Review.*

## EXERCISE CARE IN COOKING PORCELAIN.

**Robert Brewster, Chicago.**

Large pieces of work, such as full continuous gum denture, may be lifted out of the furnace and inspected, but small work, which loses its heat quickly by reason of its small bulk, should not be so treated. Porcelain should *never* be subjected to too sudden variations of heat, and the very best results, both for strength, color and translucency, are obtained by leaving the porcelain in muffle to cool.—*Extract Dental Review.*

THE DENTAL SUMMARY

*Vol. XXIII* *FEBRUARY, 1903* *No. 2*

## CONTRIBUTIONS.

### THE PREDISPOSING FACTOR IN DENTAL CARIES.*

BY EDWARD C. KIRK, D. D. S., SC. D., PHILADELPHIA, PA.

In studying the problem of the etiology of dental caries from an historical point of view, one is struck with the tenacity with which in one form or another the belief has been maintained that the causes of caries were wholly or in part internal to the tooth. The earliest records tend to show that this conception of the cause of caries was the original explanation offered of the disease. The writings of Celsus in the first century betray his belief in the theory that decay of the teeth is caused by worms acting from within outwardly, a belief which survives among the Chinese, Japanese and Hindoos at the present time, and which was undoubtedly held by them from a remote period antedating the writings of Celsus.

Later the inflammatory theory, another aspect of the theory of internal origin, held sway and even yet is not wholly relinquished by some who have noted the reactions in the way of structural changes presented by the calcified tissue of teeth undergoing carious action.

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*Read before the Ohio State Dental Society, Columbus, Ohio, December 2, 3, 4, 1902.

The modern studies of the etiology of dental caries began, strictly speaking, with the work of Leber and Rottenstein in 1867, when they published their important contribution entitled "Recherches sur la carie dentaire," followed in 1881 by the paper of Underwood and Milles presented to the Medical Congress of London in that year, and were practically completed by the work of Prof. W. D. Miller, of Berlin, published in 1884. This group of brilliant scientific studies placed the active cause of dental caries before the world in its true light, and established the fact that so far as the exciting cause is concerned, it is external to the tooth and a factor of its environment.

The last remnant of foundation in support of an internal factor in the causation of dental caries would seem to have been destroyed by the published work of J. Leon Williams, especially his papers read before the New York Odontological Society in 1897, the British Dental Association in May, 1898, and again before the New York Odontological Society in 1899.

Attacking the problem from the standpoint of the physical characters of the hard structures of the tooth, Dr. G. V. Black, as the result of a long and painstaking research (*Dental Cosmos*, Vol. 37, p. 417), felt justified in expressing the following conclusion:

"Examination of the density, of the percentage of lime salts, and of the strength of the teeth that are certainly reasonably accurate and include a sufficient number upon which to base trustworthy judgment, has shown that neither the density, nor the percentage of lime salts, nor the strength, is in any degree a factor in predisposing the teeth to caries or in hindering its inception or progress."

Whatever may have been the differences of opinion upon minor points, the major conclusion of these papers as to the exciting cause of caries being a factor of the dental environment must be generally accepted as true. The total result of our knowledge developed from the splendid researches referred to is that we know to-day *how* teeth decay. The related problem of *why* teeth decay is by no means as clear, for though we have a definite knowledge of the manner in which an infected environment may cause caries of the teeth, that fact alone is wholly inadequate as a means for solving the problem of prevention of dental caries.

There are certain well-known facts, the result of general clinical observation, which our present knowledge of the cause of dental caries fails to explain. First, the immunity of certain dentures from carious action and the extreme susceptibility of others to decay; second, the periodic oscillations in the conditions of susceptibility and immunity often observed in the same individual, and third, the tendency to a physiological oscillation in immunity from tooth decay noticeable in very many individuals in passing from youth to old age.

Every dentist of some years' experience and whose practice includes a number of families under continuous observation has probably noted many instances of practically entire immunity from tooth decay, and it is reasonable to believe that the proportionate number of dental immunes is greater than those which come under professional observation; as they need no dental treatment, the dentist is not afforded an opportunity to examine them. Opposed to these cases of immunity we have those of extreme susceptibility in which, do what we will, the tooth structure melts away like snow before the noonday sun, and between these extremes are all grades and degrees of intensity of carious action.

Again, it is a commonly observed phenomenon, so common, in fact, that it has had a strong modifying influence upon methods of dental treatment, that many youthful dentures which in early life manifest strong tendencies to decay will later develop almost complete immunity as adult life is approached. This acquired immunity may become permanent or there may be recurrences of susceptibility at irregular intervals apparently coincident with aberrations in the nutritional status of the individual, who is usually classed as one not having robust health. Finally, it is frequently observed that the susceptibility of childhood has been succeeded by an immunity extended through adult life to late maturity, but as old age approaches, a marked recurrence of carious susceptibility follows, and if the teeth are not lost by alveolar disease they frequently succumb finally to caries.

I have endeavored merely to recall to your minds facts well known to you, as it is not my purpose to consider these peculiar oscillations in the carious process in detail. What does concern us in this connection is the fact that caries is a factor of tooth environment and that the carious tendency varies not only as between individuals, but shows equally marked variations in its intensity at different periods in the same individual. One fact illustrative of the variation in susceptibility to caries of the same individual, and which has undoubtedly been noted by all present, is the frequent occurrence of so-called arrested decay, eburnification of the carious surface in connection with the first permanent molars. How often it is observed that these teeth have shown a tendency to rapid decay upon their morsal surfaces at the period of their eruption and continuing possibly five or six years thereafter, but gradually diminishing until it finally ceases, the exposed darkly stained dentine takes on a high polish like mahogany and the tooth is otherwise so sound and functionally satisfactory that we hesitate about placing a protecting contoured filling upon it. It has been customary to explain these cases of arrested caries of the teeth in question on the theory that the decay being superficial and having destroyed the morsal surface evenly, a self-cleansing surface has been left which the triturating and detersive effect of mastication has protected from the lodgment of caries-producing bacteria, hence decay has been arrested. But we know that while certain surfaces of the teeth are by their form and position relatively immune from caries, yet in an infected and caries-producing environment no surface of any tooth is absolutely so, and we must seek further for an explanation of arrested caries with eburnification of the dentine in the light of what scientific research has shown us to be the conditions which produce caries of the teeth. These facts are known to us as the result of special bacteriological research, viz.: First, that caries of the teeth is due in the first instance to the action of certain groups of micro-organisms that cause acid fermentations, ending mainly in the production of lactic acid, which is the decalcifying agent. Second, that these lactic acid bacteria thrive best and for that matter almost exclusively in a carbohydrate medium; and third, that given a dental environment presenting the factors of the bacteria, the pabulum suited to their development, and proper temperature, moisture and aerobic conditions, decay of the teeth is practically certain to follow. We can conceive of but two methods by which under the conditions stated the carious process could be inhibited or prevented. First, by the withdrawal or elimination of one or more of the factors essential to the carious process, or second, by the introduction into the environment of some substance or condition which would seriously interfere with the functional activities of the bacteria concerned in the carious process. Upon one or the other of these hypotheses it would seem that we must depend for an explanation of those cases which are either naturally or by acquired characteristics, immune from dental caries.

Our prophylactic treatment has thus far practically admitted these two hypotheses in the methods generally recommended and employed for combating the progress of dental caries. All the minutia of the dental toilet, the cleansing of tooth surfaces and the mucosa of the oral cavity are operations which to-day are known to be efficacious just in proportion as they eliminate bacteria and food debris, the two essential factors of the carious process. While the use of buccal antiseptics is a tacit recognition of the belief that some element inimical to the functional activities of caries-producing fungi may be introduced into the oral cavity and thus prevent the results which they are known to produce when permitted to develop unmolested. Both of these practical applications are defective in one important particular, viz.: Their action is temporary and they are effective only in proportion to the persistence with which they are exercised, while the persistence of bacterial influences, other things being equal, is a constant factor. Eventually then the constant factor of bacterial influence must produce its results when combated by the necessarily intermittent one of local hygienic and antiseptic means, the degree of success of the latter being relative only to its persistency. We must seek then for a means to prevent the occurrence of caries and to combat its progress when the disease is manifest, by some method equally as persistent as the disorder itself, a means that will so fundamentally alter the conditions essential to a caries-producing environment that the specific microorganisms of dental decay will be unable to thrive therein.

The conditions which in a strict sense produce susceptibility to dental caries are but little known while those which enter into the problem of immunity are still less known. The researches of Miller make it very clear that the decomposition of carbohydrate food through the agency of bacteria is one of the factors and a prominent factor in the causation of dental caries. Yet we have carbohydrate food debris in mouths immune from caries and in mouths at the same time swarming with bacteria. Or again, in susceptible mouths no amount of careful cleansing or the use of buccal antiseptics will insure absolute freedom from carious attack. It would, therefore, seem to be clear that fermenting carbohydrate food debris is not the only source of origin of the carious process. The periodic oscillations in susceptibility and the tendency of some as compared with the immunity of other individuals to dental caries points strongly, if not inevitably, to the conclusion that dental caries is a diathetic condition. That it is closely related to the processes of general bodily nutrition there can be no doubt, for upon no other grounds can we explain the variations in the rapidity and intensity of carious action in relation to variations in the health status of the individual so generally and frequently observed. We know for example that repeated pregnancies tend to induce decay in the dentures of many women, and that in wasting diseases, chronic dyspepsia and various forms of malnutrition the teeth suffer. The persistence of the impression made by the ancient error that tooth decay was a process somehow internal to the tooth has doubtless led us to feel that the interferences with bodily nutrition caused by disease, are expressed as some alteration in the structure of the tooth that renders it more susceptible to caries. Since, however, scientific research has shown that the teeth are practically passive agents in the carious process and that the causes of caries are external to the tooth, our explanation of the manner in which pregnancy and intercurrent attacks of disease may influence susceptibility to caries must be found in the way these alterations in nutrition affect not the tooth but the environment of the tooth. I have already called attention to the two only hypotheses upon which immunity from caries can in the light of your present knowledge be logically explained—by eliminating from the tooth environment some factor essential to the carious process or the introduction of some element inimical to the functional activities of caries-producing organisms. That both of these conditions may and probably do result from variations in the nutritional processes from time to time, we have strong grounds for believing. We know that the fluid with which the teeth are constantly bathed, the mixed saliva, varies greatly in its composition, and thanks to the earnest and painstaking work of Dr. Michaels, of Paris, we are also in possession of the important generalization that the composition of saliva for the several diathetic states is fairly constant, and that as the nutrition of the individual varies from time to time, so likewise does the composition of the saliva. Research in this direction has not as yet progressed sufficiently far to furnish an adequate explanation of the whole question of susceptibility and immunity to dental caries, unless possibly we are to receive it in a communication from Prof. Miller which he has promised for publication in the *Dental Cosmos* for January. But certain results have been obtained which are at least significant that the composition of the saliva exerts the most important influence upon the causation of caries, and in connection with the nutritional changes which influence the composition of the mixed oral secretion we shall in due time discover the true predisposing factor of dental caries. In the examination of a considerable number of specimens of saliva which I have made I have found in all cases where caries was prevalent, but especially in the case of children, the presence of a dissolved carbohydrate which responded to v. Jaksch's iodine test for glycogen or erythrodextrine. The finding of glycogen in the saliva has been previously reported by Salomon (vide Maly's Jahresbericht VIII 55, rep. 1879) and by Michaels

(Trans. IIe. Congres Dentaire Internationale, Paris, 1900). The close similarity of the color reaction which results from the action of the iodo-potassium iodide solution upon glycogen and erythrodextrine respectively suggests a possible error in the reported findings of glycogen in the saliva for the reason that the diastasic action of ptyalin upon starchy food debris is known to produce among other serial products erythrodextrine, the reaction of which with the iodine test is scarcely distinguishable from that of glycogen. The significance of the presence of glycogen in this connection is of prime importance, for the reason that it represents a fermentable carbohydrate produced by the process of food metabolism and dialyzed from the blood plasma through the salivary or buccal mucus glands into the mouth cavity, and is therefore an index as it were to the character of the nutritional state. On the other hand, if the substance detected in the saliva by the iodine test be simply erythrodextrine, then it is not an index of the nutritional state, but merely evidence of the presence of a soluble carbohydrate, the product of mouth digestion.

The presence of glycogen in the saliva at times is highly probable, though in the absence of a more characteristic test for that compound in the presence of erythrodextrine its presence in the mixed saliva cannot be taken as finally demonstrated. It would doubtless be possible to determine the question with sufficient accuracy by an examination of the saliva taken directly from the glands and before contact with carbohydrate food debris in the mouth cavity was possible. That I have not as yet done owing to the necessity for special arrangements for that line of work which I am not at present ready to take up. Certain physical characteristics of the saliva, its opalescence for example, suggest in some cases the presence of glycogen, a suggestion further intensified by the chemical test referred to and the strong probability that the predisposition to dental caries is correlated with and dependent upon a diathetic state makes it appear not at all unlikely that some fermentable carbohydrate substance, such as glycogen, the product of food metabolism is constantly dialyzed from the blood plasma into the mouth through the medium of the glandular apparatus of the buccal cavity in cases of marked susceptibility to dental caries.

The reaction of the saliva is of importance as a predisposing factor of dental caries. It is a well-known fact that the growth of many kinds of bacteria is profoundly influenced by the reaction of the culture medium, and until evidence to the contrary is forthcoming we are warranted in assuming that variations in the reaction of the oral fluids are not without modifying effect upon the progress of dental caries. My own tests of saliva in pronounced carious cases show a constant alkaline or neutral reaction of the saliva, and that where acidity of the secretion is manifested there is a tendency to arrestation of the carious process with development of erosion.

In this connection let me call attention to the fact that these observed differences in the reaction of the saliva are characteristic of the secretion as it is poured into the mouth and are not necessarily the result of fermentative change afterward. Hence, if the reaction of the saliva has any modifying effect upon its suitability as a culture medium for the development of caries-producing fungi, we have additional evidence that the predisposition to dental caries is a factor of general nutrition, a diathetic condition dependent upon the processes of metabolism of food, for upon that process depends the reaction of the saliva.

Another fact which I desire to emphasize as the result of my studies of saliva is that we are probably in error when we ascribe all cavities found in the teeth to the action of caries. My reasons for making this assertion are based upon the microchemical examination of many salivas from the mouths of patients in which rapid dissolution of tooth structures was taking place. And notwithstanding the fact that all presented cavities affecting all of the tooth surfaces, a marked difference in the analytical results was observed, one class showing the existence of lactic acid action and another the action of sodium acid phosphate upon the tooth structure with little or no lactic acid action.

It is evident that where tooth dissolution from any cause is progressing rapidly through acid action we would naturally expect to find the salts produced by action of the acid solvent upon the tooth dissolved in the oral fluids, and such is the case. Thanks to the technique of microscopic and micropolariscopic analysis which has been given to us by Michaels we are able to determine with accuracy the existence in the saliva of those salts which are the end products of acid action upon tooth structure whether the acids be produced by lactic fermentation or due to the acidity of the saliva as a result of faulty metabolism in the process of nutrition.

Applying this method to the study of cases which clinically are denominated cases of rapid caries, it was soon discovered that in certain individuals little or no evidence of lactates of the tooth bases was to be found in the saliva, but instead thereof an excessive amount of sodium dihydrogen phosphate and the calcium salt which it produces by action upon the tooth. These latter cases are then, strictly speaking, cases of rapid erosion due to faulty metabolism and are not true caries at all, although presenting clinical appearances not unlike caries, resulting in cavity formation and gradual extension of margins until the whole tooth crown is nearly or quite involved.

Investigation of the food habit and mode of life of those individuals presenting the acid saliva and the form of tooth dissolution referred to revealed the fact that they were addicted to the excessive use of carbohydrate foods, using large quantities of sweets and a minimum proportion of proteids and albuminoids—they were also of sedentary or inactive temperament disinclined to physical exertion or exercise. It seems clear, therefore, in view of the abnormal existence of sodium acid phosphate in the saliva in these cases, that the metabolic processes in these individuals is characterized in general by an insufficient oxidation of the carbohydrate pabulum taken into the body, leading to an over-production of carbon dioxide as compared with the intake of oxygen. The surplus of carbon dioxide is dammed back, as it were, on the blood, replacing oxygen in the hemoglobin with the extreme probability that the cells of the buccal mucus glands are under these abnormal conditions of nutrition stimulated to the performance of that function which is normal to the renal epithelium, viz.: The conversion of neutral sodium phosphate into acid sodium phosphate through the mass action of carbonic acid, the acid exudate being in the case of the buccal mucus glands thrown out into the mouth to work out its destructive effect upon the teeth.

Another aspect of the question under consideration will bring me to the conclusion of this communication, viz.: The part which natural selection may play in the predisposition to dental caries.

If we expose to the atmosphere under the same conditions two vessels, one containing fruit juice, for example, and the other a proteid substance like blood or meat infusion, both will in the course of time undergo decomposition, but the end products will in each case be totally different, the first will ferment and the process of decomposition will terminate in products acid in reaction, while the second will purify and its decomposition will terminate in products alkaline in reaction. But both were subjected to precisely the same sources of mixed infection and we must, therefore, conclude that in each instance only those bacteria survived which found in the two substances respectively the sort of pabulum best adapted to their life needs.

We have in this fact, it seems to me, the illustration of a principle, viz.: That the composition of the culture medium acts passively through natural selection as a powerful agency in determining the character of bacterial infection and growth. Applying this principle to the problem of predisposition to dental caries, it seems to me obvious that as the composition of the saliva is known to vary in relation to nutritional states, we are again forced to the conclusion that the predisposing factor in dental caries is a diathetic question and that true prophylaxis can only be achieved by a profound study of nutrition and of those modifications in the nutritional process which so alter the composition of the oral fluids as to make them unsuitable for the propagation of caries-producing fungi—in short, to comprehend those nutritional conditions which produce immunity.

I am by no means unmindful of the importance of the recent researches of bacteriologists who have been concerned with the study of immunity from infectious diseases in general, more especially the magnificent work of Metchnikoff and Ehrlich, and it is not at all improbable that it may be found that the saliva of carious immunes may contain defensive proteids which prevent the action of lactic acid organisms upon tooth structure in those cases, but again it is evident that if the explanation of immunity from caries is to be found in Ehrlich's hypothesis, both susceptibility and immunity are still factors of nutrition, so that from any view point with our present knowledge we are driven back to the conclusion that the predisposing factor in dental caries is diathetic, and that local treatment alone is inadequate to arrest its ravages.

## METHOD OF ACCURATELY ADJUSTING DAVIS AND LOGAN CROWNS TO ROOT WITHOUT BAND OR CAP, BY A SYSTSM OF MEASUREMENTS.*

BY A. F. MILLER, D. D. S., SANDUSKY, OHIO.

Face off the root as indicated in figure 1, select a crown (Davis' preferred), and grind so it will set squarely on the face of the root. Take a wire measurement of the root, being particular to press the wire with a small flat burnisher into the irregular surface of root; then place the measure on the end of a piece of seasoned hickory whip stock and impress it into the wood (Fig. 2) with a hammer, and cut out to the form of the root (Fig. 3).

The illustrations pertain to bicuspids, but the same method can be applied to cuspids and incisors. Enlarge the canals for the post with a White No. 2 bur, then follow with a No. 4, which will sufficiently enlarge canals to receive the post. Take anterior and posterior measurements of the outer circumference of root and post canal (a-b, Fig. 1) with a pair of small compasses and transfer the measurements to the wooden form of the root face. Drill holes into the form to correspond to post canals in the root; insert the posts and with a pair of flat-nosed pliers bring them together so they will assume shape, as in Fig. 7. Fill the crown with cement, insert post and place it on the root in the position you wish it to assume in its permanent position in the mouth. After cement has set, remove crown with post and place on wooden form (Fig. 4) and grind it down even with the circumference of the root form.

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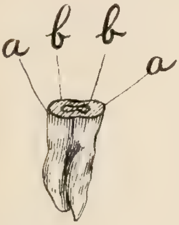
*Given as a clinic at Ohio State Dental Society, December, 1902.



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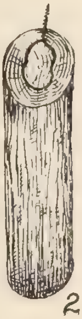

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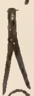

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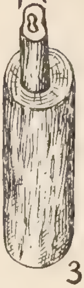

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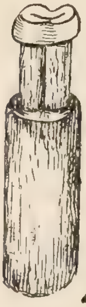

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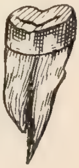

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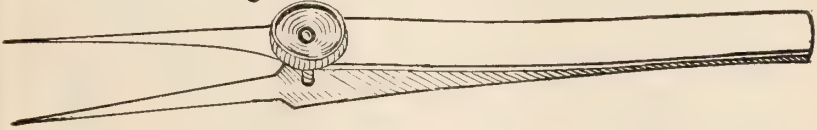

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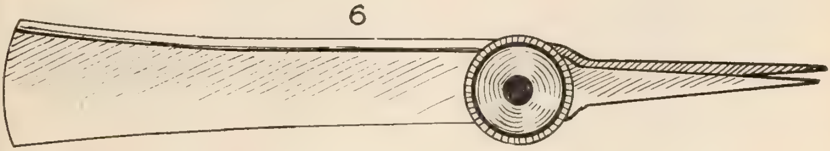

Carefully follow out this process, and you will have a perfect junction of the root and crown (Fig. 5), which will insure strength and cleanliness.

To make a pair of compasses for taking measurements, get a pair of jewelers' oo pliers and put in a set screw. (Fig. 6.) Any dentist having a set of small taps and dies can do this.

# RESTORATION OF THE INCISIVE EDGES OF THE ANTERIOR TEETH WITH PORCELAIN.*

BY LEVITT E. CUSTER, B. S., D. D. S., DAYTON, OHIO.

Cases of fracture and defective development of the enamel of the incisive edges of these teeth generally call for restoration without the removal of the whole crown of the tooth. Conditions indicating a porcelain tip are those happily medium between a small gold operation and a full porcelain crown. This operation is not advised where but a mere film of porcelain would restore the contour, for a gold and platinum filling would there be better. *Porcelain, to have strength, must have bulk.* Veneers, thin pieces, and edges in exposed positions, are the ruination of porcelain work. The indications for the practicability of a porcelain tip are where from one-fourth to one-half of the crown is missing.

The first step is the dressing of the edge of the tooth with a stone to a symmetrical outline. A straight line across the labial surface is better than a curved one in this work.

The second step in the preparation is for the anchorage of a single pin, if the tooth is pulpless, or a U-shaped staple if the pulp is alive.

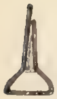
FIG. 1.

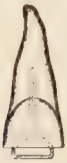
FIG. 2.

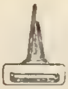
FIG. 3.

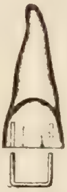
FIG. 4.

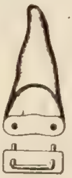
FIG. 5.

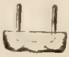
FIG. 6.

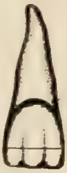
FIG. 7.

Where the pulp is absent the pin should be shaped as diagrammed in Fig. 1. This is easily effected by bending a piece of 20-gauge platino-iridium wire upon itself and filling the point with Ames' solder, gold eighty parts, platinum twenty parts. The enlarged end should be almost as wide as the dentine at the edge, and the solder should not entirely fill the loop, for reasons that will appear. The pulp-canal should be enlarged laterally to receive the large end of the pin up to an imaginary point where the horizontal wire will come about the middle of the completed tip, as shown in Fig. 2.

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*Presented at the Ohio State Dental Society, December, 1902.

A piece of platinum foil, a little larger than the end of the tooth, is slit in the middle to receive the pin. This is placed on the end of the tooth and the pin pushed through to its seat. The two are then united with the smallest bit of pure gold that can be handled. (Fig. 3.) Only one wire need be soldered in this manner. The piece is then returned to the tooth and the platinum carefully adapted to the end. If platinum about twice the thickness of that used for inlay work be used it will be found easier to manage, and the extra thickness will not materially affect the final fit in this operation.

In those cases which present with a live pulp, the following course is to be followed: Two holes are drilled with a No. 2 bur in a parallel direction between the pulp and the enamel, to about the depth indicated in Fig. 4. In drilling these holes they should both be drilled at the same time by making purchase with the fingers on the neighboring teeth and lifting the bur from hole to hole, alternately drilling a little in each. In so doing the holes will be parallel and of the same depth, and there will be but little pain.

A U-shaped staple, of 20-gauge platino-iridium wire, is bent as shown in Fig. 4. This is fitted into the holes and the ends are cut off to such a length as to bring the horizontal part to about the middle of the completed tip. A piece of platinum, as before described, is placed over the end of the tooth and punctured over the holes in the dentine. The staple is then forced to its seat and the whole removed, and soldered at one end with a small particle of pure gold. (Fig. 5.) It is then returned to the tooth and the foil adapted to the incisive edge.

We now have what may be called the matrix for the porcelain tip for either a pulpless or a live tooth. Porcelain of a dark yellow color, "Close" finely ground, or "Brewster" body No. 13, is now packed about the loop so as to represent the dentine of the tooth in color and contour. This is baked, the piece fitted to the tooth, and the edges of the platinum again adapted to the enamel. It is then removed and porcelain to match the neighboring teeth is added, to the extent of over-contouring. It is then fused.

If the over-contouring of this layer has been sufficient, the shrinkage will have reduced it to about the proper proportions. (Fig. 6.)

The platinum is then carefully stripped from the porcelain, and after dressing a trifle from the ends of the pins to compensate for the thickness of the platinum matrix, the piece is set with cement in the usual manner and dressed. (Fig. 7.)

Such an operation, if the porcelain be not too thin, will not only present a good appearance, but will be quite as serviceable as any other method of restoration.

## A NEW METHOD OF SOLDERING.

BY F. W. STEPHAN, D. D. S., CHICAGO, ILL.

Take of filings of an easy flowing solder, and filings of the gold to be soldered or some higher fusing metal, about equal parts. Also borax and water rubbed up in a mortar or otherwise to make a creamy solution. Mix the filings with sufficient borax solution to make a thick paste. Pack the joint to be soldered with this paste and heat till fused. Care should be taken that the entire mass is evenly heated throughout, and of course all the ordinary precautions of having surfaces bright and clean, etc., must be observed.

This method is especially adapted when large spaces are to be bridged, or where it is desirable to add to a cusp or to contour or otherwise change the shape of a piece in any way. Almost any form desired may be obtained, due allowance being made for shrinkage.

The particles of high fusing metal serve as a support to retain the shape of the mass, and the low fusing solder acts as a cement when fused to unite these particles and bind them to the piece being soldered.

# MODERN USE OF SOFT FOIL.*

BY G. S. JUNKERMAN, M. D., D. D. S., CINCINNATI, OHIO.

Method in dental science is a chained circle of limited size. We drop one link and take up another and must necessarily in an average life take up the same link more than once. Is a request by unanimous vote of the executive committee of this society for a paper on soft foil an indication that we have arrived again at the soft foil link in the chained circle? Speaking from a long experience I trust that such is the case, because I feel assured that this soft foil link will be so influenced by the hard campaigning of hard foil that it will be molded into a new link to be known as the modern soft foil method which I wish to lay before you to-day.

If we exclude method of insertion and look only at quality it is very generally agreed that gold is the best filling material that we have. Those who have condemned gold on account of method have been blinded by ignorance of the very best quality which that material possesses. I believe that there is a physical difference between soft and hard foil (two terms that I shall use instead of cohesive and non-cohesive). Soft gold becomes cohesive by either heat or force. Hard gold becomes non-cohesive by either heat or force. If you mallet soft gold it becomes cohesive, just as cohesive gold over-malleted becomes non-cohesive. This principle was not known, at least to any great extent to former soft foil workers. They made their cylinders with accuracy and precision and packed them as a stone mason or brick layer builds an arch so that one would hold the other. They may possibly at times have induced cohesion in the soft foil mass, but they never worked with that end in view; consequently the old method did not permit of the insertion of large contour fillings such as we can insert to-day with soft foil. If it is conceded, and it must be, because it has been so proven, that soft gold can be made cohesive enough during the process of insertion, then you take away the last leg upon which the cohesive foil operator has to stand He should be condemned to life-long servitude for the untold torture that he has inflicted upon humanity by his unending cohesive foil operations; and the amalgam worker should be his slave to make amends for the "queer" that he has been unloading upon the public.

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*Read before the Ohio State Dental Society, December 3d, 1902.

It was formerly thought necessary to have a special set of instruments to manipulate soft foil. Such from a modern point of view is not only not necessary but to be condemned. Any plugger that can be used advantageously for hard foil is likewise adaptable for soft foil. If the large plugger point is condemned for hard foil it is doubly so for soft foil Any good set of cohesive foil pluggers makes equally a most desirable set for soft. All that is necessary is that it should be in large enough or small enough lumps to fit the receptacle into which it is to be placed. Good condensation with a mallet or hand pressure is required. It is not necessary or advisable to deep cut grooves or retaining pits in order to have the cavity well prepared. General good form to the cavity is all that is required with the orifice just a slight degree smaller than the base. It requires more skill, but much less labor. Ninety-five per cent. of all my fillings are inserted with soft foil. It is a humane method much less rasping and painful and requires so little time that it is preferred by our patients over all other filling materials. It may be truly said that in proportion as teeth need saving, soft gold is the very best filling material that we have.

It might be of some interest to know just what fillings can be inserted and what ones are to be excluded from this method. It is probably not safe to attempt to restore the cutting edges of incisors. I have accomplished this feat, but it is of doubtful stability and endurance. It is usually necessary to have two walls between which to build. Not so much for the purpose of retention, but as a matrix which will permit of sufficient force being brought to bear upon the mass to insure cohesion. The two walls form the main matrix, but each piece of gold is used to form a matrix in the mass into which the next piece is to be placed. It might make it more clear to state that but little attention is paid to the piece that you are inserting, but all attention to the formation of the matrix or the wedge-shaped space for the insertion of the next piece. This interlacing of gold is best accomplished with fine instruments. The larger ones will cause bridging and will fail to induce the necessary cohesion. The condensation is lateral as well as vertical or directly in front of the plugger. The lateral condensation does not occur, however, from pressure on the part of the plugger, but rather from the piece that you are inserting and on account of the wedge-shaped space into which you are placing it. The question would arise, do you get as much cohesion as if the gold were annealed? You do not, but you get sufficient for the purpose and any more would be wasted strength. If you should crack off with a hammer the tooth from around one of these fillings you would generally find the filling in one mass and while it could be separated more easily than cohesive gold, yet the cohesion is quite considerable and sufficient. Centrals, laterals and cuspids with buccal and labial walls gone, can be easily restored with soft foil. The approximal cavities in molars and bicuspids with a fraction of the lateral walls remaining can be perfectly restored, and we might say, every cavity with the exception of the cutting edges becomes easy not alone to the operator, but to the patient. Humanity cries out for operations that are speedy and scientific. It is not the dentist who makes a perfect operation who can claim skill, if at the same time he exhausts the vital energy of his patient. One may be able to cut well, but the skillful surgeon does all that and saves the blood of his patient, too. It is not alone to the accurate, but to the speedy and accurate that the appellation of good dentist should be applied.

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# GUTTA-PERCHA AND CEMENT IN CROWN SETTING.*

BY HOWARD WILLIAMSON, PORTSMOUTH, OHIO.

By the aid of a copper crown setter a perfect joint is made between the Logan crown and root with a gutta-percha washer. The gutta-percha is made pliable and held so by heat passing from the crown setter to crown and platinum pin until a perfectly burnished joint is made.

This has advantage over cement by not being acted on by secretions of the mouth.

The crown can then be cemented permanently after the root has been treated and the apical end filled with Oxpara.

# A METHOD OF MAKING INLAYS FOR CAVITIES DIFFICULT OF ACCESS.†

BY DR. J. S. M CURDY, FORT WAYNE, IND.

Prepare the cavity cup-shape with well-defined edges. When prepared, vaseline the tooth and cavity and take an impression with pink sheet gutta-percha. Fill this impression with amalgam, and when thoroughly hard swage platinum foil 1-1000 of an inch in thickness between impression and mold thus made, forming an accurate fitting matrix in which to bake the porcelain inlay.

This method is particularly applicable to those teeth where the platinum cannot be easily burnished into the cavity direct. [The doctor also showed a porcelain inlay in the buccal surface of his lower third molar that he had prepared the cavity for and inserted himself. He also exhibited porcelain teeth in which he had prepared cavities before baking them. These he used for technic work.]—ED.

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*Given as a clinic at Ohio State Dental Society, December, 1902.

†Clinic at Ohio State Dental Society, December, 1902.

# THE RELATION OF THE DENTIST TO PHYSICIAN AND SPECIALIST AND VICE VERSA.*

BY E. H. SHANNON, D.D.S., CLEVELAND, OHIO.

The subject naturally divides itself into two distinct parts, namely: The relation of the dentist to the physician and vice versa; and secondly, the relation of the dentist to the specialist and vice versa.

The relation of the dentist to the physician is purely an ethical one, as the opportunities of the dentist for referring cases to the physician are fewer than those wherein the physician can refer cases to the dentist. I might state here that I do not care to go into detail in this paper (leaving opportunity for those who may feel disposed to discuss the paper), but will only consider the subject in a general manner, as it would take too much of your valuable time to go into detail.

As dentistry is a specialty of medicine, it behooves us to know something of medicine in general, as a specialist of orthodontia, or any other specialist of dentistry would be expected to know something, at least, of the general practice of dentistry. Thus the intelligent dentist should have some idea of the different diseases that affect suffering humanity, in order to converse intelligently with his patients in reference to any ailment, or discover any disease that may be causing trouble and annoyance to his patient. It is not necessary that he, the dentist, should know all in reference to the case, its diagnosis and prognosis, but at least enough knowledge should he have to advise his patient to seek the services of a physician. Many a person will continue suffering from some chronic trouble caused primarily by a slight indisposition, which, if neglected, may result in a disagreeable and offensive chronic malady, which might have, and in all probability could have been checked in its earlier stages. Suppose a condition of this kind should come before the notice of a dentist. A little advice, diplomatically given, may have, and in most cases would have, more influence with that person in persuading him or her to seek medical assistance than the combined influences of the immediate members of his or her family. Therefore, does it not behoove the dentist to take an active interest in the welfare of his patients? I think so. The aim of medicine is identical with that of dentistry, namely: the relief of suffering humanity in the quickest and surest manner. Both professions almost have a divine purpose and are regarded by some people as ministering angels on account of the blessings they bring to mankind, and it is our duty to maintain this high dignity of our profession. But it sometimes seems to me that our profession maintains this exalted position, not because we have so many angels enrolled among us, but in spite of the fact that we have so few.

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*Read before the Northern Ohio Dental Society, June, 1902.

### RELATION OF THE PHYSICIAN TO THE DENTIST.

We will now turn our attention to the relation of the physician to the dentist. There seems to be more ways wherein the physician can aid the dentist than vice versa, and thereby give greater happiness and comfort to his patients. How often do we dentists see cases that are nauseating to the stomach and revolting to the eyes? How often do we have patients come to us, from say the age of twelve and upwards, where the mouth is in a very unhygienic condition? Why do we see such cases? Is it because the patient has no sense of hygiene or healthy surroundings? Partly; but most frequently it is due to neglect and carelessness. How can we remedy this sad condition, or even partly alter its dire effects, if allowed to continue upon its way unmolested? Can the physician be of any service to us? I think so. How? The family physician, if he is conscientious and has the welfare of his patients at heart, while treating the different members of the family from time to time, cannot help but notice whether the mouth or its organs are in a sanitary condition or not, and if he should find them in an unsanitary condition what should he do, or, in other words, what is his plain duty? His duty is to give his best counsel, and that would be to advise them to consult their dentist and have their mouth and teeth put in a sanitary and hygienic condition. Dr. Keyes, in his paper on Pyorrhœa Alveolaris with specific reference to Practical Medicine, in the January number of the *Cosmos*, gives several cases where this virulent disease, pyorrhœa, had caused several different derangements of the stomach, and where the physician depending upon his treatment alone was unable to get satisfactory results, but in conjunction with the dentist most happy results were attained. Now if these results have been obtained, and they are being attained, by the co-working of the dentist and physician, why do we not cultivate a closer relation with one another? Why do we not encourage the interchange of thoughts and ideas? We are working for the one end and why not make our road clearer and brighter by the assistance we can give one another?

### RELATION OF THE DENTIST TO THE SPECIALIST.

I shall only speak generally, so will not name the several different specialties of dentistry. What I have to say will be true of all the specialties of dentistry as I see them.

The relation between myself and the specialist has been a most happy one, and I can truthfully say that my patients have appreciated my effort in securing for them the best results. It seems to me that most of us, to use a slang phrase, have been up against it, that is, each one of us has had at least one or more cases which has tested our skill to the utmost. We may have had a case wherein we have been sorely tried. It may have been in a field or department of dentistry in which we have had but little experience. Supposing then that we proceed with the case. We do all we can, but at the completion of the work we find it does not answer our conception of what it should be. In other words, it is a complete failure. Now we hesitate as to whether we ought to insert such a piece of work or not. In our own mind we know that that piece of work could have been done properly by a specialist in that particular line of work, and our conscience will always accuse us of wrong-doing, if we have any left, for not giving our patients our best advice, for not sending our patients to a specialist in the first place. Our first duty is to our patients. In order to survive we must have patients, and when we get them the only way we can retain them is by being honest, straightforward, and by doing our work well. I do not believe in bluff. I heartily despise it; and when I find myself incapable of performing a certain kind of work I am not ashamed to own or acknowledge my incompetency. I have not the nerve or audacity to assert that I can perform any and every kind of dental operations that may chance my way. And so it is—the sooner we appreciate the fact that there is a limit to human capabilities the sooner will we have less failures scored to out account. Yet, at the same time, I do not wish to put up any barriers against healthy progression, but what I do wish to encourage is that we use every day horse sense. Use our brains. Cease bluffing. Be willing to acknowledge our mistakes and always give the patient the benefit of the doubt. Why, I consider it criminal practice the way some of our patients have been treated. Some operations have been performed, seemingly with the sole purpose of draining our patients and not giving an equivalent in return.

The specialist is now a well-established factor in Dental Art and Science. He is no longer an experiment. The specialist of dentistry is as distinct a branch of dentistry as dentistry is of medicine and just as important a one. And if this is the case, what relation should there be between a specialist of dentistry and the general dental practitioner?

## "THE ETHICAL RELATION BETWEEN THE SPECIALIST OF DENTISTRY AND THE GENERAL DENTAL PRACTITIONER."

In dental ethics we have a literal code. which. if lived up to, would find us an ideal unit of professional dignity and honesty. But you may write and preach ethics from now until the judgment day; you may have every dentist in the universe sign this code of ethics, and yet we still will have hypocrisy and deceit—men who will deviate from the true standard of ethics because of the fraility of human nature. If

I were to formulate a code, I would have but one common law —"Do unto others as you would have others do unto you." I would trust my fellows. I would encourage them to be independent and do away with rule. A rule has always seemed to me an incentive for revolt, or kick over the traces, and many of our most prominent dentists have been playing with the code of ethics for years and seeing how near they could infringe on the literal sense of the code without really attacking it. The moral sense of the code they have time and again shattered to pieces. And so it is, a law is binding only in its literal sense. If one has no moral stamina a law is utterly useless to that person. We have no written ethical law between the specialist and the general practitioner, and thank God we haven't. The only law we want or need is—"Do unto others as you would have others do unto you." If I send a patient to the specialist I expect him to send that patient back to me when he has completed his particular work. Simply—"Do unto others as you would have others do unto you" and you cannot go astray.

In conclusion I wish to reaffirm that the specialist of dentistry is no experiment, but an invaluable factor to dental science. All scientific research and progress tends toward the betterment of the race, and thus it is that the different specialisms of dentistry is a step nearer the ideal.

A closer brotherly and professional feeling between the physician and dentist has been my desire since embarking upon my chosen calling. There is nothing to be gained by antagonism between the two and there is everything to be gained by a welding of forces, sympathy and good fellowship. So let us be congenial; a blessing to each other and a boon to humanity. Let us bury our professional jealousies and prejudices and become as one; a perfect unit; the completion of an ideal machine for the advancement of dental science and the realization of greater and more lasting blessings for our patients.

# SOCIETY PROCEEDINGS

## OHIO STATE DENTAL SOCIETY.

### DISCUSSION OF DR. JUNKERMAN'S PAPER.

### THE MODERN USE OF SOFT FOIL.*

**Dr. H. L. Ambler**:—I have no doubt the essayist can do what he claims; but I have never been able to make non-cohesive gold cohesive by malleting it. The first cohesive gold was made in 1839 by James Leslie of Cincinnati. It was called cohesive because it became so by annealing. Before that all golds were supposed to be non-cohesive, and it was thought to be a great gain to have the gold so non-cohesive that it worked soft like lead. Dr. Black made a set of experiments in which fillings were made with cohesive and non-cohesive foils, and then tested for specific gravity, strength, etc., It was found that fillings made wholly of soft foil contained more air space and were capable of more condensation than those made of various combinations of non-cohesive and cohesive foils, and the more cohesive foil used the less condensation was possible. These experiments clearly showed that where strength is demanded non-cohesive foil cannot be depended upon. According to the testimony of one of our best gold foil makers there can be no physical union between the layers of non-cohesive foil, it is entirely of a mechanical character. This was well recognized by soft foil operators years ago and the principle of wedging the gold into the cavity was universally adopted.

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*Paper appears on Page 109 of Current Issue.

Contour fillings, such as are now made of cohesive foil, were seldom attempted by old-time operators.

I believe many cavities may be well filled with non-cohesive gold foil. Where the walls are irregular, with deep undercuts and the contour of the tooth is intact, good fillings may be made. These fillings when made in the occlusal surfaces often wear out by the force of mastication. But in these same cavities I believe that a good cohesive foil properly annealed will make a much more perfect and durable filling. I have tested many of the so-called non-cohesive gold foils and have yet to find one that cannot be made cohesive by proper annealing; but I do not think a non-cohesive gold can be made cohesive by force. Where this gold is actually non-cohesive it is an impure gold. The process of making non-cohesive gold is a manufacturer's secret. Foils that have to be rendered non-cohesive by subjecting them to the fumes of ammonia, sulphur, phosphorus etc., can be easily restored to cohesive foils by proper annealing.

Dr. E. M. Cook:—I think we are too often confused by the terms cohesive and non-cohesive gold foils, and I imagine very few operators use strictly non-cohesive foil. The strictly non-cohesive foil has its place, and I sometimes get very good results from using it. I do not think it can be made cohesive, as the essayist says, by malleting, although I generally use it with the same pluggers I use in condensing cohesive gold.

Dr. J. F. Stephan:—I do not like the terms "soft" and "hard" as used by the essayist, it is much better to retain the terms cohesive and non-cohesive. I use cohesive and non-cohesive gold in combination to good advantage by placing a layer of the non-cohesive gold on the cavity margins and covering it with a layer of cohesive foil. By placing it in alternate layers a hard filling will be made and at the same time the adaptation to the cavity walls is made more perfect.

Dr. Junkerman:—In closing this discussion I would say that it is possible to make non-cohesive gold adhere to a solid filling simply by working it with proper filling instruments. I have done this with Abbey's non-cohesive foil unannealed and in the presence of several gentlemen who were well qualified to decide whether I had succeeded or not. I think I could teach Dr. Ambler to do the same. By heating gold foil we change its molecular condition and produce a readjustment of its crystalline character which favors cohesion or physicial union. I am not prepared to say that a similar change takes place under the manipulating process of packing the gold into the tooth cavity; but I am very sure that some change takes place which favors a strong union. I have tested for tenacity, fillings made in this manner and find them sufficient to withstand any probable strain. In reality cohesive gold is more brittle than non-cohesive. I have here some samples of fillings made of non-cohesive gold according to my method and you never saw more compact and polished surfaces on any fillings.

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# INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF EDUCATION.

(Continued from page 711, Vol. XXII.)

Dr. E. Sauvez, the secretary-general, then read the report which here follows:

I will now give you a *resume* of the most important events that brought about the organization of this body, and also the steps taken by the Federation since its last year's meeting. It is exactly two years since the Federation was organized, it being created by a resolution of the general assembly of the Third International Dental Congress, held in Paris in 1900. Its first meeting took place last year in Cambridge, and in looking at the present audience I cannot help seeing that the importance of this body has been largely increased since our last meeting. The great assembly of which the Federation is the outgrowth thought that the work of preparing congresses by the constitution of international committees should survive for a future work similar in nature to that for which they were originally created. That assembly appreciated the advantages to be derived from bringing together the professional forces scattered in the different countries and forming in this way a permanent international body. This is a very solid and compact group because of the status of the members that compose it, inasmuch as the members of the national committees have been elected by their *confreres* after due selection, the only way of satisfying minds imbued with modern liberal ideas. For this reason the Federation met with warm approval beyond the Atlantic, as it is an organization fully in harmony with the ideas of the sons of free America.

The Federation, then, and its Executive Council are the direct outgrowth of the Congress of 1900. At the memorable meeting to which we have already referred, the Federation Dentaire Internationale was created, and it was decided that a permanent committee of nine members should direct the work of the Federation until the holding of the next congress. The Executive Council decided to create international commissions to study the most important questions of our profession, viz.: dental education and public dental hygiene. The first session was held last year, partly in London and partly in Cambridge. That session was devoted especially to the organization of the work and to the consideration of all the questions that were to be submitted for your study and consideration, and to the appointment of essayists to discuss these questions.

The foregoing is a *resume* of the events that took place up to the adjournment of the Cambridge meeting. Let us examine now what has occurred since that time. The secretary has published the proceedings of the London-Cambridge meeting, viz.: a *resume* of the meetings of the Executive Council and of the International Commission of Education. This report has been published in French, and, thanks to the kind interest which Dr. Kirk had in this matter, the report has also been published in English, and each of you have received a copy. We were also able to publish the report in German, and our colleague, Dr. Aguilar, has taken charge of the publication of the report in Spanish. During the course of the last year we have at intervals published bulletins in four different languages so that the dental profession might be made acquainted with the most important features of our work. Lastly, we have carried out several decisions of the Executive Council, and we have had the satisfaction of receiving a considerable number of replies. Dr. Roy, secretary of the Commission of Education, in conjunction with the secretary-general, has taken steps to obtain the reports the collection of which was decided upon at the last meeting. The Executive Council had asked that a report of the professional status of each country with special reference to schools, societies and journals be forwarded to the secretary-general. The Commission of Education asked that the members appointed for this purpose should answer the three questions that had been submitted with reference to the best methods of education. This Commission also requested that reports be prepared on the subject of dental legislation and education, and to state the conditions under which the affiliation of all the schools to the Commission of Education of the F. D. I. might be brought about. The members of the Commission on Public Dental Hygiene were also requested to present a report upon dental hygiene with reference to public health. We have received, translated and published in three fasciculi which have been sent to you the communications which were forwarded to us, and we now take the opportunity to thank the essayists for their careful work.

We are in receipt of a communication in which we are informed that Dr. Franck had been regularly appointed by the general assembly comprising the delegates of several dental societies of Austria and Hungary in place of Dr. Pichler, consequently Dr. Franck is now a member of the Executive Council, and this collaboration is of great importance to the work of the Federation.

The officers of the Executive Council have held several meetings at frequent intervals and numerous decisions have been rendered. The question of deciding upon the date of this meeting was the cause of numerous discussions and of a voluminous correspondence. The officers of the Federation and of the American Dental Society of Europe, wishing to hold a joint meeting, met with considerable difficulty in fixing the date because of the meetings of the French Congress at Montauban and the German Congress in Munich. Finally, through the efforts of several officers of both societies and the personal efforts of Messrs. Royce, Mitchell, Cunningham and Davenport, we were able to agree, as the only purpose in view was to assure the success of the Stockholm meeting and a perfect understanding between the members who have come from such distant countries. Because of these circumstances we were obliged to decline an invitation which had been addressed to the members of the Federation by Dr. Haderup, of Copenhagen, on behalf of the Danish Dental Society.

The Executive Council has done everything within its power to increase the attendance at the Stockholm meeting. Communications were addressed to Dr. Limberg, president of the Russian National Committee, requesting that the Russian societies should send delegates to the Commission of Education. This question was discussed at the Congress of Odessa, and we have been informed that Dr. Klingelhoefer, of St. Petersburg, has been appointed delegate. Professor Limberg, because of ill health, will not be able to be with us on this occasion. We are glad to say that we have been informed that from fifty to sixty delegates have arrived, a number considerably larger than that of last year.

This completes the description of the most important features of our work during 1901-2.

Enough has been said with reference to the past, therefore we will now survey the present. The International Dental Federation begins to-day its second meeting in this beautiful city of Stockholm, in accordance with the decision passed last year at Cambridge and accepted unanimously by the members of the Executive Council, following the invitation regularly transmitted to us by Messrs. Forberg, Christensen, Sandstedt, and Forssman.

After a short discussion regarding the F. D. I. banquet, the question of the invitation of the National Dental Association of the United States to hold the Fourth International Congress in the city of St. Louis was brought up for discussion.

Dr. Cunningham moved that the reply to this invitation should be postponed until the next meeting of the F. D. I.

Dr. A. W. Harlan was willing that the decision should be postponed to the next session, in order to give time to examine a technicality in the invitation in question, but Drs. Hesse and Aguilar stated that it was preferable to take up the discussion at once, as the Council must take into consideration that the invitation had been addressed through regular channels and in due form.

Dr. Cunningham insisted that the final decision should be deferred until the next session of the International Dental Federation, thinking that perhaps by that time invitations from other countries might have been received.

The president then decided that independently of the question of accepting or declining the invitation, the Council should fix at that session the date of the next Congress. It was then submitted to the vote of the Council and was adopted, as all the votes except one were in favor of the president's suggestion.

Professor Hesse thought that the invitation to hold the next Congress in the city of St. Louis, in the United States of America, should not be accepted, and further, that his opinion would have Dr. Cunningham's support. He regretted that his views would suggest an apparent lack of courtesy toward the American *confreres,* but he thought that the general interests of the International Dental Federation should be considered first, and that it was only with that purpose in view that he decided to recommend the non-acceptance of the invitation. He then stated that his specific reasons would be submitted to the Council in writing.

The president stated that this question should be very carefully studied and considered before reaching a decision.

Dr. Franck stated that after having conferred with his countrymen they had reached the conclusion of accepting the cordial invitation made by the dental profession of America.

Dr. Sauvez expressed himself plainly and definitely as being in favor of accepting the invitation.

Dr. Forberg said that as the reasons given by the members who opposed the acceptance of the invitation were not in any way so important as those advanced by the members who were in favor of holding the Congress in St. Louis, the invitation should be accepted.

The president submitted the question to the individual vote of the members, with the result that the invitation was accepted by six votes against two. The Council then appointed a committee composed of Drs. Hesse, Aguilar and Sauvez to prepare the acceptance to the invitation addressed by the National Dental Association of the United States.

The Council then proceeded to the election of officers for the ensuing year. The result was as follows: President, Dr. Ch. Godon; vice-presidents, Drs. Florestan, Aguilar and Franck. Dr. Sauvez was elected secretary-general by acclamation.

In accordance with Dr. A. W. Harlan's proposition, the Council decided that in the letter which would be addressed in reply to the invitation presented by Drs. Wm. C. Barrett, Truman W. Brophy and Eugene H. Smith, in the name of the National Dental Association of the United States, it should be specified that Drs. Truman W. Brophy, William C. Barrett, Eugene H. Smith, W. Conrad, Gordon White, H. A. Smith, W. R. Windhorst, S. H. Guilford and J. D. Patterson have been designated to form a committee to collaborate toward the organization of the Fourth International Dental Congress, as representatives of the Executive Council appointed by the Third International Dental Congress.

The secretary-general read a statement signed by Messrs. Hesse and Cunningham, that they could not give consent that the F. D. I. should lend its support to the Congress to be held in St. Louis in 1904, for the following reasons:

(1) A lapse of four years after the last International Dental Congress is too short a period to warrant the holding of another congress, as the progress which has been made in dentistry since then is not considerable enough to justify the holding of another international gathering.

(2) That he could not assure the attendance of a sufficient number of members from his country to justify calling it an International Congress.

The secretary-general then read the letter to be addressed to the National Dental Association of the United States in reply to the invitation to hold the next congress in the city of St. Louis.

The document referred to is as follows:

The Executive Council of the International Dental Federation intrusted by the Third International Dental Congress with the organization of the succeeding congress, having read the invitations addressed by—

The National Dental Association of the United States of America.
The Governor of the state of Missouri.
The Mayor of the city of St. Louis.
The National Association of Dental Examiners.
The Dental Society of the State of Missouri.
The St. Louis Dental Society.
The Society of Dental Science of St. Louis.
The Odontographs of Western Missouri and Eastern Kansas.
The St. Joseph Dental Society.

These being regularly represented at the Stockholm sessions by Messrs. Truman W. Brophy, Wm. C. Barrett and Eugene A. Smith, accredited for this purpose:

CONSIDERING on the one hand,—

(1) That the progress of dentistry in the interval of four years seems insufficient to warrant a scientific interest in a fourth International Dental Congress after the one that was held in Paris in 1900;

(2) That it would have been desirable that the forthcoming congress should be held in a country in which a similar international reunion had not been held before:

But, on the other hand,—

(3) That universal expositions attract a considerable number of visitors from all countries, and are especially favorable to the success of international congresses;

(4) That several international congresses will be held upon the occasion of the St. Louis Universal Exposition, and that it is necessary that odontology should be represented:

(5) That no other invitation has been received;

(6) That it is desirable to reach a decision so as to give ample time for a good preparation;

(7) That the good organization of the congress is assured by the worthiness of the invitations received:

Accepts the invitations, and Decides that the Fourth International Dental Congress shall be held in the month of August, 1904, in the city of St. Louis, Missouri, United States of America.

The undersigned certifies that this is an extract of the proceedings of the Executive Council, and that it is an exact copy of the letter to be sent in reply to the invitation received. The Secretary-General,

(Signed.) Dr. Sauvez.

Dr. Aguilar suggested that the Federation should hold its forthcoming meeting in the city of Madrid at the time of the holding of the Fourteenth International Congress of Medicine. A motion to this end was presented by Dr. Aguilar, and was adopted by seven votes against one.

The secretary-general then read the following communication from Dr. Haderup: "Dr. Haderup is of the opinion that a committee of three should be appointed, said committee to have power to increase its number, for the purpose of preparing an international dental nomenclature and stenography. This committee to present a report at the next meeting of the International Dental Federation, to be held in 1904."

The secretary-general also read a communication from Dr. Forberg, with reference to the publication in each country of periodical reports of the most important writings on dentistry recently published. This report could be submitted to an editorial committee which would publish them in a universal dental review in two or more languages. The bulletin of the Federation could be used for this purpose, and in that way the International Dental Federation which unites to-day the dentists the world over would also become instrumental in creating a work which would constitute the universal history of dental science. Dr. Forberg submitted this proposition to the consideration of the Executive Council. It was decided that this question should be settled at the next meeting in Madrid.

The secretary-general proposed that the Council should organize several international commissions—one on schools, one on jurisprudence, and one on statistics. The Council then discussed the question of forming an international commission on jurisprudence by the appointment of one member in each country, and that the officers of the

Executive Council should prepare a report of this question to be submitted at the next meeting in Madrid.

It was then decided that the discussions should be continued in Madrid, and that the officers of the Federation should have in charge the organization of the forthcoming meeting of the International Dental Federation, to be held in Madrid in April, 1903.

The Executive Council then adjourned.

# CURRENT ARTICLES

[Condensed for THE DENTAL SUMMARY readers.]

## SOME USES FOR ENGLISH TUBE-TEETH.

BY HORATIO C. MERIAM, D. M. D., SALEM, MASS.

The details of root preparation may be passed over, but later the importance of being guided by their anatomy will be pointed out. We have in the English tube-teeth a fine piece of porcelain with a hole through it lined with a platinum tube, which guarantees uniformity of diameter. This porcelain may be ground and polished without injury to its surface, a fine texture fits it admirably for matching certain colors in the natural teeth, and the hole through it allows for all the forms of attachment that can possibly be made by dowelling or its equivalent (Fig. 1, *a*).

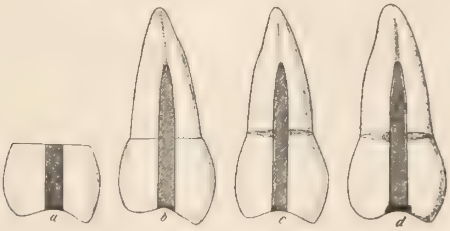

FIG. 1.

We have, after grinding the tooth to fit the root and seeing that it has the right occlusion, the simple form of a dowel passing through the tooth into the root (Fig. 1, *b*).

Next we have the tooth concaved on its surface against the root to hold cement or gutta-percha as a preservation (Fig. 1, *c*); to this may be added the grinding out to allow the use of a headed dowel or pin (Fig. 1, *d*).

Since the Indian oil-stone has been introduced I have had some points made of that material which are suitable for this countersinking, as are also some forms made of carborundum and rubber, though these may not keep their shape as well as the harder material. Pins may be made by fusing to the end, if platinum, a globule of pure gold (Fig. 2, *a*), or if of spring gold wire (Fig. 2, *b*), which is often used, by fusing the end into a globule, and then passing it through a hole in a suitable anvil or a draw-plate, driving it down flat; or a small piece of plate may be soldered to the end of the pin (Fig. 2, *c*), the pin afterwards being held in a chuck and the head filed to fit the countersunk hole in the grinding surface of the crown. A long screw may be used, though screwing a screw up the center of a root is not to be recommended, nor has the use of a headed pin much to commend it. One of the advantages of the use of these teeth is that we can insert the pin, see that the gutta-percha is packed well about it, and then slip the crown on. The pin may, of course, be tapped and a small screw put in or a tube used, should it be desirable to crown a tooth before the drainage of pus has ceased in cases under treatment. This may often be desirable in the incisors, and for this these teeth are specially adapted (Fig. 2, *d*). I am taking it for granted that you are all familiar with the platinum and iridium tubes that were introduced some years ago. My own choice is a pin with a slot cut in the end as you would for a screw, and then after this has

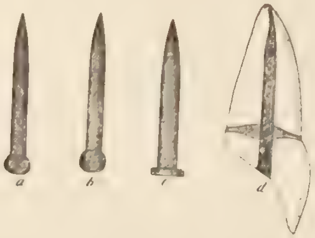

FIG. 2.

been placed in the root and the tooth put on, filling this and the countersunk space with gold foil (Fig. 3, *a*).

This covers some of the ways in which a dowel may be used. We now take those cases where it is judged best to use a banded crown. For this band a firmer gold should be made than is ordinarily used for crowns, for it often has to be made narrow, and in some cases to bear much strain, so that gold and solder should be used. The band should be first fitted to the root and then placed on the round part of an anvil. and the upper edge that is to receive the crown spread by striking with a small round-faced hammer; then annealed and placed root end down on a piece of lead or air-chamber metal, and the tooth, previously ground to correspond with the root diameter of the band, protected by another piece of the soft metal and driven in. It may be necessary to remove and reanneal to spread the ring a little more. To show what can be done, a molar tooth is reproduced here (Fig. 5). Such a stretching would not take place in soft gold, as the ring would go down under the hammer. The bands may be made narrow or not as the case indicates, and cut away on the buccal surface, this being reinforced if need be. In cases where the bite is short it is best to let the band come well down, so as to meet the occlusion of the under teeth on the palatal surface, that the strain may be taken off of the porcelain; this surface can also be reinforced (Fig. 4, *a*).

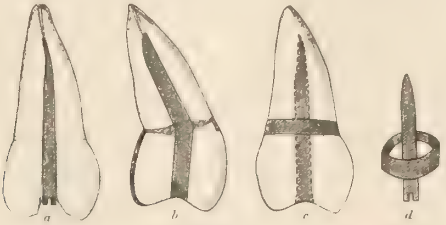

FIG. 3.

Teeth may also be ground so as to be much inclined inward or outward to meet occlusion or to harmonize with those adjoining. One such case is shown here (Fig. 3, *b*). Where it is desired to cap the root without letting the band run on to the crown the cap may be made as usual (Fig. 3, *c*, *d*), with the center pin running through, and the tooth put on and finished in any of the ways previously shown. In some short bites it is an advantage to have the pin take the force of occlusion and protect the porcelain.

All that has been shown should be understood to refer to the second bicuspids or to teeth with one straight root and canal.

I reproduce here a cut of a pin shown by Mr. John Girdwood. It has been in use by me for many years, and as I have not reported it I can advise it the more heartily as the credit for its introduction must be given to another. Mr. Girdwood shows it as made in two ways by soldering an upright to the forked cross-pin (Fig. 6, *a*), and by soldering a pin to the side (Fig. 6, *b*). I have never used the latter method. Mr. Girdwood seems to use but one size of wire. My practice has been to use No. 17, English standard gauge, for the tooth, and a smaller size for the root, varying the latter to correspond with the size of the root-canal. In small teeth the ends of the bifid pin may be made small enough to take the curve of the canal. They have also been made by using a wire one-half the size of the hole in the tube-tooth, twisting this for the length of the crown (Fig. 6, *c*), dividing and fitting to the root, and flowing a little gold solder over the twisted portion. The root of this tooth is often wide, in its palatal-buccal diameter, and there is sometimes a little trouble in having the crown portion of the pin in the right position; to overcome this I use a half-round wire of the same number; the forked part, too, may be fitted first, then the wire bent around it, and compressed but not fastened (Fig. 6, *d*).

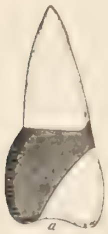

FIG. 4.

FIG. 5.

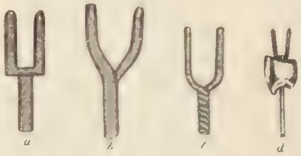

FIG. 6.

The pin may then be tried in, the crown slipped on, and, when the right position has been found, removed and soldered. This pin may prove of value when there is great variation between the hole in the tooth and the root-canal, by using a pin bent at a right angle and the half-round wire bent and soldered to it. All that has been given regarding cap and band applies to this tooth, but the cap should have a pin for each root and a center pin for the crown, to be fastened, preferably, by a gold filling (Fig. 7, *a*.)

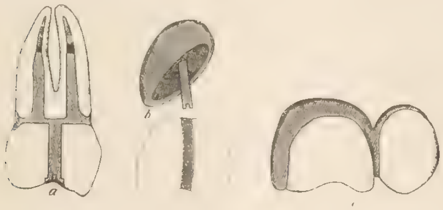

FIG. 7

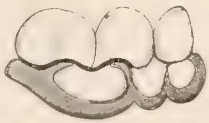

FIG. 8.

A method of using tube-teeth for extension crowns was given before the Academy some years since, and need only be recalled here, but the cup and pin shown (Fig. 7, *b*) can be used when it is desired to insert a bicuspid by banding or capping the first molar. The cup is made by fitting the tooth to the band as given earlier in the paper, a round cup with a pin in it is burnished over the upper portion of the tooth and band, care being taken to bend the edges of the cup over so as to indicate the relative position of cup and band, and the tooth is then removed and the cup and band soldered together. This cup is placed against the cap (Fig. 7, *c*) on the molar and soldered to it.

If a band is used on the molar it should be reinforced to give sufficient strength when cut away on the buccal side, and it should come to a sharp occlusion with the under teeth at its distal surface. It is best to wedge well and by reinforcing at this point secure contour. The distal occlusion helps to hold the band in position. In one case a large cavity has been filled with amalgam after putting on the band, and in another the band has been cut and fitted to correspond with the cusps of the molars. The treatment of another case is here shown where the band was extended backward to secure occlusion with a superior third molar (Fig. 8). Several cups could be used by soldering together for small bridges, removable if desired.

The importance of contour for crowns should not be overlooked, both as a protection to the membranes around the teeth and to aid in keeping the root in position. The bicuspid teeth move outward if they are given only a partial occlusion. They do not call for sharp cusps, but the occlusion should be even to keep them in line, and they should be large enough at the neck to cover the root, and extend beyond far enough to equal the protection once given by the natural crown. I would call attention to the Whitten scaler for trimming, because for some of the work in trimming roots it is the best instrument that I know. This leads to the control of bleeding while trimming roots. For this, tincture of iodine is preferred, for it penetrates deeply and contracts the vessels when some agents only coagulate the blood at the surface. The cheek may be protected during grinding by using a cotton-fibre pad, which adheres to the cheek for a time and allows for easy holding away from the wheel. Small squares of bibulous paper, for root drying, folded diagonally and rolled, are of value. The squares are made by sending a thousand or more sheets to a book-binder and having him cut them to the desired size. It is much better than cotton for wrapping around a broach, as it goes on evenly. In the use of a broach it is well to dip it into peroxide. It can be neutralized by bicarbonate of soda if there is fear of its acting on the steel of the broach.

Polishing is dirty work. Ready cleansing of the hands can be secured by making a polishing composition containing soap, —one part powdered Castile soap and two parts of whatever polishing substance is to be used, to which add a small quantity of oil and a little water, all to be heated together and poured or pressed into a small paper box. This can be used in polishing, and the hands readily cleansed for operating. In polishing, large buffing wheels six or eight inches in diameter give the polish such as we see on jewelry. Felt wheels of the same size give smoother work than smaller ones. Fine chalk, called by dealers in painters' supplies French white, is smoother than whiting.—*Extract from International.*

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# A FEW THOUGHTS.

BY R. H. HOFHEINZ, D. D. S., ROCHESTER, N. Y.

In the course of my experience with porcelain inlays I have met with numerous failures, owing to the rapid dissolution of the cement in mouths in which there was hyperacidity, especially in cases of erosion, where cement is of absolutely no use, and yet where inlays were indicated. In all of these instances the inlays which failed were upon the labial portion of the teeth. the very ones where hyperacid yet prophylactically clean mouths need them.

## SETTING THE INLAY WITH GUTTA-PERCHA.

In a few cases I overcame the difficulty by deepening the cavity, as suggested by Dr. Capon, of Toronto. Numerous instances, however, demanded a quick replacement of the inlay. To overcome this difficulty I have endeavored to make use of gutta-percha in solution to fill, as far as possible, the small, say 1-1000 of an inch space, between the inlay and enamel margin. My method is the following, assuming cavity to be a labial one:

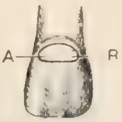


FIG. 1.

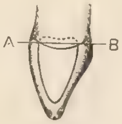


FIG. 2.

After the inlay is made the inside is roughened in the usual way. The inlay is then coated with a light-colored varnish and laid aside for the evaporation of the ether. The cavity in the tooth is deepned and slightly undercut at A and B, Fig. 1. The undercuts are filled with cement. The inlay is carefully held with a pair of tweezers, and the edges are moistened with gutta-percha dissolved in about 90 per cent. chloroform and 10 per cent. eucalyptus oil. (My experience with gutta-percha dissolved in chloroform alone has been that the chloroform evaporates too fast for its proper manipulation.) The inlay is then gently put in its place. Much care must be given the amount of cement used in the cavity. If there is too much surplus, the cement may dislodge the small amount of intervening gutta-percha. Much neatness is required to get the materials where they are wanted and as needed for their respective functions.

Where I have a large aproximal inlay in an anterior tooth, I use the gutta-percha under the gum line from A to B, Fig. 2.

The rest of the cavity, after its proper enlargement, is entirely filled with cement.

I have not used this method long enough to recommend it as absolutely successfully, but I have reason to believe that there is enough intrinsic value in the exeriment to commend it to the profession for the all but hopeless cases such as have compelled me to apply it.

### GOLD-AND-GUTTA-PERCHA INLAY.

Where I have extraordinarily large labial cavities, especially in canines or unusually large inaccessible buccal cavities in molars, where the pulp might become endangered by the presence of zinc oxyphosphate, I have been in the habit of making an inlay of gold entirely dependent on gutta-percha for its retention.

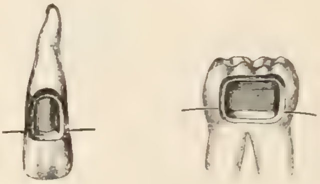


FIG. 3.

After preparing the cavity I make a large and distinct bevel around its margin. (Fig. 3.) I then fit a piece of gold, about 28 gauge, against the cavity, being careful that it thoroughly covers the bevel. I increase the depth of the cavity, wherever least dangerous to the pulp, and solder small pins taken from porcelain teeth in a direction to correspond to the deepening of the cavity. (Fig. 4.)

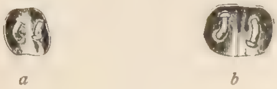


FIG. 4.

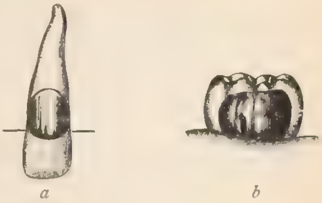


FIG. 5.

The inlay is then polished and made somewhat thinner toward the edge, and is now ready for its position. The cavity is varnished and filled with a medium heat gutta-percha and the inlay put in place. A small amount of gutta-percha may prevent the inlay from perfectly fitting against the surface of the tooth, and it is for this emergency that I make a good-sized bevel and have the edge of the inlay very thin. The gutta-percha can easily be cut out with a fine and warm excavator, and the inlay so thoroughly burnished against the tooth as to make it doubtful on casual inspection whether it is an inlay or a filling. (Fig. 5.)—*Extract Cosmos.*

## A CLAMP FOR STENO'S DUCT.

BY DR. EARLE C. RICE, PHILADELPHIA.

Probably no phase of operative dentistry is fraught with so much annoyance from salivary secretions, as operations upon the buccal surfaces of molar teeth. It is not always convenient, nor is it in all cases possible, to apply the rubber dam. The napkin next suggests itself; here again our efforts may be met with failure. An active parotid gland may saturate the napkin ere we can insert our filling, or may cause us to work with such haste that an imperfect operation is the result.

It has been stated that to do good and lasting work, one must make haste slowly. It is therefore necessary that some method be employed for operations upon these buccal surfaces, whereby the flow of saliva may be checked until the operation is completed.

Who can say that he has never found it difficult to preserve sufficient dryness to set a crown upon a molar tooth? Napkins packed in the buccal space only tend to stimulate the functional activity of the gland. How, then, with these objections to methods in general use, may we proceed to secure dryness in buccal cavities, and about teeth to be crowned? We shall see.

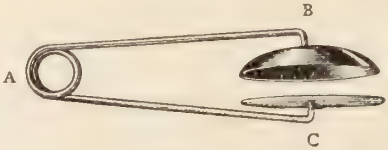


FIG. 1.

Fig. I represents an instrument which, as to construction and ease of application, is the acme of simplicity. A is a spring which holds the cup B and the disk C in close contact.

To apply the duct clamp, as the writer has chosen to call the instrument, place the cup B over the opening of Steno's duct, and the disk C upon the outside of the cheek. The pressure exerted by the spring will hold the appliance firmly in place. The flow of parotid saliva is completely checked, and the operator proceeds with his work undisturbed by the distressing presence of moisture.

The writer has employed this simple device for eighteen months before suggesting its use to the profession. He has kept the clamp in position for periods of time ranging from ten minutes, to one hour and ten minutes, without the slightest discomfort to the patient, and with no untoward after-effect.

With one duct clamp over the opening of each parotid gland, and a saliva ejector to remove the sublingual fluid, the field of operation may be kept dry and the operator may give his undivided attention to the work which needs all his skill.—*Dental Brief.*

# METHODS OF CROWN AND BRIDGE-WORK.

BY GEORGE E. ZINN, D. D. S., ELKHART, IND.

The best crown is one made somewhat after the style of the Richmond, of which my crown is a modified form. This crown is the result of improvements, to me original, that have been made from time to time in actual practice. After treating the root and filling it, I dress it down with corundum wheels to nearly a plain surface extending from a point about 1-16 to 1-32 of an inch above the gum on the lingual side to a point about that distance below it on the labial or buccal side. By this I have a root face, the labial, 1 2-3 of which is slightly below the gum margin. I then remove the enamel usually remaining on the lingual side of root. I ream out the canal with round burs, using a small one first and following with larger ones until I get the post hole the desired size and depth, always preserving the round form. I do this because a round hole will give me space for the strongest post possible relative to its greatest diameter, and it leaves no weak side to the root as a rectangular or oval shaped hole will do.

I select a post of round iridio-platinum wire about gauge 16. I point this somewhat and cut a slight thread on it for the distance it is to be inserted into the root to give it an uneven surface, facilitating the adhesion of the cement. Before cutting this for my post I cut from pure platinum plate about gauge 34 or 35 a disk large enough to cover the end of the root. I punch a hole in this, put it on the wire and place the threaded end in the root (see Figs. 2 and 3) and force the platinum disk against the end of the root and hold it in its relation to the post with a little wax. I then remove the post and disk

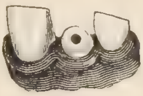


FIG 1

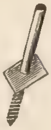


FIG 2

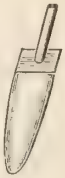


FIG 3

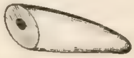


FIG 4

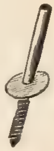


FIG 5

together and stick the threaded end in loose plaster or pumice until the disk lays on top and solder with a little gold, 22k or 24k. I then replace it on the root and with serrated instruments hold the disk against the face of the root and burnish the disk down to root and over its corners sufficiently to mark the size and shape of root on the disk of platinum. I remove it and with scissors I cut the disk the shape of the face of the root (see Fig. 5), and flow over its upper surface a thin layer of gold to stiffen it some, after which I replace it on the root and reburnish again to be sure of perfect adaptation. I then dress the edge of the disk with a file and cut from the same platinum a strip long enough for a half band. This I bend around a form a little smaller in diameter than the disk and slip it on the lingual half of the disk and tack it at one point with solder (see Fig. 6). I then place it on the root and burnish my half band to the root, securing a perfect adaptation. I remove it and, setting post down in my loose plaster or pumice, I flow sufficient 22k solder on top to make the whole thing rigid. After trimming my half band to the desired shape and cutting the top of the post off, I have my cap and post complete as in Fig. 7.

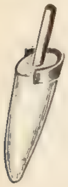


FIG 3

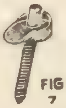


FIG 7

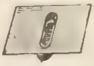
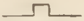


FIG 8


CROSS SECTION

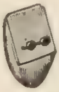


FIG 9

This half band, in my opinion, observation and experience, is sufficient to preserve the strength of the root. There is no weak side to the root. The lingual half of the root is firmly bound by the half band and post and will not break from the front half; and, further than that, the force on a tooth set on such a face tends toward the labial or buccal side, and it cannot move in that direction because of the half band. I don't believe roots split unless they are very frail from previous decay or are cut nearly in two by drilling for the post. I have never had any trouble when preparing a root as stated.

I then place my cap in position on the root, take a plaster impression, make my model with cap in position and place on the articulator. I select my facing and grind to fit and also round the corners where desired to burnish my backing over, and with a pair of pliers modeled for the purpose I hold the pins and rivet the end until I have a well defined head on the pin similar to that on a vulcanite tooth. I now make my backing, as shown in Fig. 8, out of pure platinum, about 34 or 35 gauge. This is made with the cap portion just large enough to slip over the headed pins, and deep enough to set down to the tooth and with the side walls parallel, as shown in the cross section (Fig. 10). I place this on the tooth and burnish it to the surface perfectly, as in Fig. 11, forming a close fitting seat or saddle, into which the facing sets. I then remove it, anneal, replace and reburnish until the adaptation is perfect, then holding in a pair of delicate tweezers I flow gold over its surface and deplace and reburnish. When the adaptation is satisfactory I lay on loose plaster and cover the back with 22k solder to the desired shape. (See Fig. 12.) With a little wax in the cap I stick it onto the facing and place it in position on the model and wax it up on the back.

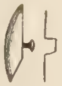
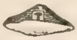


FIG 10



CROSS SECTION

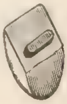


FIG 11

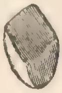


FIG 12

I remove the model from the articulator and with a warm instrument I warm the facing and remove it, leaving the back insitu and invest my case in plaster and asbestos about 3 to 1; being careful to fill the caps with the investment. As soon as it is set I remove the wax and solder. It can be dropped in water to cool and is ready for finishing, part of which I do with the facings in place.

I now take a small engine bur and roughen the inner walls of the cap to aid retention and put the facings on with vulcanite or cement, sometimes using one and sometimes the other. I consider archite very good for that purpose, as it is very hard and strong. When put on this way there is practically no change in the shade of the facing, the crown can be set with a guarantee that the facing is not checked by soldering, and if the facing should ever get broken off another can be ground to fit and put on in a short time, with little inconvenience and no tampering with the cap or root. This is the way I make my modified Richmond crown for any of the anterior ten teeth, and my experience with all kinds of crowns has proven to me it is the most substantial and the most beautiful crown made.

I make my bicuspids similar to the incisors, using the same backing, but using the S. S. White saddleback tooth, which does away with the appearance of gold over the grinding surface and makes a very beautiful appearance in the mouth. (See Figs. 13, 14, 15, 16, 17 and 18.)

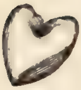


FIG 13

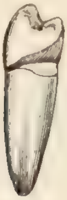


FIG 14

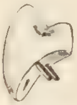


FIG 15

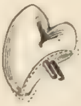


FIG 16

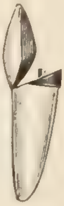


FIG 17

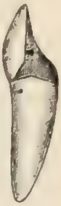


FIG 18

In the application of my method to bridges I make my abutments on the anterior teeth, just as I make my crown and usually use on the molars a full gold cap. I then proceed as for an ordinary bridge, but back the teeth with the same kind of backing, always using the saddleback teeth for posterior teeth, unless I have a case with such a close bite that they cannot be used. After being waxed to position and facings removed, and being invested, it can be soldered immediately, can be cooled in water if desired and finished without delay.

The points of advantage in this method are: The preservation of the strength of the root; the half band; the perfect adaptation of cap to the root and the easy setting of the same; the replaceable tooth; the saddleback, to which the tooth is attached after all soldering is done, which avoids the necessity of heating the porcelain with consequent checking, and also the use of the saddleback bicuspids and molars. Further than that, there is a great saving of time, for this crown can be made and set while the patient is in the chair if desired. Owing to the fact that there is no heating of the porcelain, much of the work can be done in less time than it has taken to describe it. There is no delay of drying out the investment, in heating up the investment or in waiting for a case to cool. I can make a crown of this kind in from one-third to one-half the time required for the Richmond crown, or even less.

Up to the present time I have always made my backing from platinum plate soldered with gold, which is the slowest part of the whole operation. I have had trouble in getting dies made to stamp them out, but at present I am having some made that will do the work satisfactorily, and these backings will be on sale at the dental depots in probably another week. The ready-made backing for this method is my own invention.

I am also negotiating for the manufacture of the facings and the saddleback teeth with headed pins, and with the backings and teeth on hand crown and bridge-work will be much more easily and quickly done, with a certainty of better service to our patients and better fees to ourselves.—*Extract American Journal.*

## REPLACING FACING—QUICK METHOD.

### BY H. E. EATON, TORONTO, ONT.

In the backing from which the facing has been broken, drill pin holes to correspond with pins in facing to be put on. Grind facing to fit. Carbon paper may be used to mark points of contact that need grinding down. With Dr. E. A. Bryant's bridge-repair outfit, which is composed of a countersink, dies for threading pins, and a combined carrier and driver, used to adjust the nuts, gold nuts are supplied to exactly fit the enlargement made by the countersink. These instruments are made for the right angle, in order that any part of the mouth may be reached. Having fitted the facing, countersink the pin holes on the palatine or lingual surface with the instrument made for that purpose. Turn a thread on the pins in the facing, dry off the backing, and mix a little cement as you would for setting a crown. Apply it to the backing, place the facing in position, and with the carrier adjust the nuts to the protruding ends of the threaded pins. Screw up as tightly as they will bear, grind off and polish the ends of the nuts, remove the surplus cement, and the work is completed.—*Dominion.*

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## LOWER IMPRESSIONS AND CUSHION LOWER PLATES FOR SPECIAL WORK.

### BY DR. C. C. BACHMAN.

Dr. Bachman's contention was that most dentists take an impression hurriedly and in the manner easiest for them at the moment, without considering that a few minutes spent at that time to secure good results would be more than compensated for by the ease and satisfaction with which the finished denture can be inserted.

In preparing a tray for a lower impression he cuts away in front and at back all parts of the tray that will compress those parts of the mouth that are liable to movement in speaking, talking, laughing, or eating, etc. After the tray is in the desired shape, he fills it with soft plaster, and having the patient open the mouth, not too wide, he presses it gently to place. When the tray is well down he has the patient open the mouth wide, then close it, and repeat this several times. At the same time the tongue is raised up, pushed well out of the mouth, and moved laterally. These movements, taking place while the plaster is setting, will cause it to indicate very clearly the area of the alveolar ridge that the plate can occupy and not be dislodged by the surrounding tissues when in action. Even though the rim edge of the denture be very uneven, he does not cut the projecting part away to make it look more pleasing to the eye, as by so doing much of the rim bearing of the denture is destroyed, bringing more pressure on certain other parts.

The cushion lower plate described was made for a lady whose mouth was exceedingly tender, and as she had already had twelve lower plates made and could wear none of them, she was very much discouraged. The idea of a plate with a soft-rubber cushion occurred to him and he made one with the whole lower surface of the plate made of palate rubber about one-sixteenth of an inch in thickness. The experiment was successful and the plate is worn with comfort.

In cases where the alveolar ridge is sharp he has made plates having merely a narrow strip of palate rubber to relieve the denture at the top of the alveolar ridge. With this method of relief he has good results in cases where the six anterior teeth remain and the posterior lower teeth have been extracted for years, leaving the ridge very thin and sharp.—*Cosmos.*

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## SETTING OF CROWNS AND BRIDGES WITH GUTTA-PERCHA.

Gutta-percha as a medium for setting crowns and bridges has some advantages over oxyphosphate. It is insoluble in the fluids of the mouth, and its use makes possible the removal of the bridge or crown at any time by the application of sufficient heat to soften it. Unfortunately, gutta-percha is not sufficiently rigid to answer in all cases, so that its scope of application is somewhat limited. Besides this, the manipulation of gutta-percha is not always a simple matter, particularly in complicated work. The best way to proceed to work gutta-percha for attaching a single crown is to heat the band and post and paint these with a thin solution of chloro-gutta-percha, the object in using the chloroform is simply for the purpose of making it more readily applicable. The heat in the crown will soon drive off the chloroform, leaving a thin film of gutta-percha attached to the metal parts. After this has been done, place a thin strip of gutta-percha on the inside of the ferrule and also add a thin layer to the pin. After the gutta-percha is cooled somewhat, press it in position on the root, and before giving it time to fully harden, remove again and carefully trim off all the surplus which has been forced out around the margins. After doing this, add a slight film of gutta-percha to the post only, and then, after carefully wiping out the canal with chloroform and drying the same with the hot air syringe, carefully heat the crown and gutta-percha again and force it into position, holding it steady until the gutta-percha has had sufficient time to fully harden. The method of attaching all gold crowns and all porcelain crowns does not differ from this.—*From Dental Brief.*

## HOW TO PRESERVE RUBBER-DAM.

BY ALBERT P. TSCHIRNER, D.D.S., ST. LOUIS, MO.

It is a known fact that rubber-dam, although one of the most useful of accessories to a dental office, is nevertheless one of the most difficult things to purchase in first class condition. The article as offered has usually been on hand for some time, and in nine cases out of ten, already shows signs of decreased resistance, due to its hardening on exposure to the air. Furthermore, taking it for granted that the dam as purchased was in perfect condition, how many dentists are in a position to derive the full benefit from the amount purchased? Again, how often is not a half or a quarter roll of dam, substituted for a new one? The question therefore, of properly preserving rubber-dam for use as required in dentistry, is of far greater importance than many might suppose. It being only necessary to point out that it is by no means an uncommon occurrence to see the dam tear on the slightest provocation, under, say, a half completed gold filling. Any dentist, to whose interest it is to have rubber-dam in first class condition on hand at all times, will therefore be interested in giving the following directions a trial:

1. Secure only such rubber as is in the best possible condition. Too much care in this direction cannot be exercised; and besides, it is really worth the trouble.

2. Rubber, being an organic substance, necessarily undergoes a change on exposure to the air and must, therefore, be protected in order to insure its usefulness. To accomplish this end, secure a number of Mason's glass jars, filling the same with pure (boiled) water, adding to each jar of water a few drops of such antiseptics as carbolic acid or lysol. Then immerse a loose roll of fresh rubber dam in an upright position, taking the precaution to shake out all air between the folds before screwing on the cover. The jars should at all times be filled with water to the point to overflow in order to exclude all air. Rubber, preserved in above manner, can be kept in perfect condition, if necessary, for a period of about one year. For use, remove the desired amount, dry the same and rub down with talcum-powder. This means a little extra work on the part of the dentist, but the satisfaction of having rubber-dam on hand upon which one may rely represents full compensation for the required outlay of time and money. For the operating-room it might furthermore be suggested, that a week's supply of dam be kept in a convenient place in a neat glass bowl, in which case it becomes necessary to hold the rubber under water by aid of a suitable glass-slab.—*Dental Era.*

## A METHOD OF ARTICULATING PLAIN TEETH.

H. M. CANNON, D.D.S., BUTLER, MO.

I begin by setting up the uppers as I want them, care being taken to have the bicuspids and molars conform to the lower ridge as much as possible (that is laterally).

Then I set the lower second bicuspid in its proper place, which is between the upper first and second bicuspids. Then set the first bicuspid and molars to articulate properly. Follow the same rule on the other side. Then set the six lower anterior teeth. Generally they will be too wide to fit the space, and will have to be ground on each side a trifle to make them fit. I believe that mal-articulation is the cause of most misfits in lower plates, and if this rule is observed, one need never fail to have a perfect articulation.—*From Western Dental Journal.*

# EDITORIAL

## PROFESSIONAL CONDUCT AGREEMENTS.

Canada has taken a step in advance toward stamping out charlatanry. Trinity University, of Toronto, Can., recently passed a resolution that every candidate for the degree of Doctor of Dental Surgery must make a promise and agreement as follows:

"I........................do solemnly promise that so long as I hold the Diploma of the University of Trinity College, or remain on the rolls as a graduate in Dentistry, I will not resort to any advertising of a kind that may be adjudged by the said University to be unprofessional, nor will I be guilty of any other practices deemed by them unbecoming to my profession or calculated to bring discredit upon the University.

"And I hereby agree that if, in the opinion of the said University, I shall have violated at any time this undertaking in any way, I will, if the said University shall so decree, surrender my Diploma and Degree and all rights whatsoever that I may be in the enjoyment of as a Graduate of the said University, and will consent to my name being struck off the rolls."

This agreement goes a step further than similar agreements in colleges of the United States. The one exacted by the Dental Department, University of Michigan, is as follows:

"To maintain the dignity, and further the honor of the profession which I am entering, and in loyalty to my Alma Mater and the desires and precepts of its faculty, I, the undersigned, willingly and cheerfully promise to abide by the 'code of ethics' of the National Dental Association. I will strive to deport myself in such a manner as to claim the respect of the public, the good will of my co-workers in the profession, and the continued esteem of my instructors and fellow graduates. If at any time I should fail to so act, I shall expect to forfeit all claims to personal or professional recognition by my Alma Mater."

Such acts are certainly commendable aids toward the observance of ethics and professional conduct, but to what extent they can be relied upon from a legal standpoint, especially the revocation of diplomas, remains to be seen. Could similar clauses be incorporated in the various state laws, making it a misdemeanor under penalty of forfeiture of license, to resort to unprofessional methods of practice, the beneficial results would be far reaching. Now that individual colleges have made a start, attempting to induce dental graduates not to disgrace their Alma Mater or profession, it might be well for the National Associations of Faculties and Examiners to consider the subject and, if feasible, make an effort to bring about such enactments as will restrain dentists from doing that which is not only unprofessional in itself, but degrading to the dental profession.

## SUSPENSION OF INTERCHANGE OF LICENSE.

It was thought a step toward reciprocal interchange of license had been accomplished when the last New Jersey law was passed, as it was supposed it would meet the requirements of the New York state law making interchange of license possible between the two states. The New Jersey Board began recognizing the New York license and licensed, at different times, in all about twenty from New York state. Recently a New Jersey licentiate applied for license in New York, on the strength of his New Jersey license, but registration was refused him by the Regents of New York on the grounds that the public school from which he graduated was not up to the standard of requirements in New York state. Soon after this the members of the New Jersey Board passed a resolution declining, for the present, at least, to issue licenses without examination, to persons holding licenses to practice in New York state.

It is unfortunate that this should have occurred for, if continued, it may retard the bringing about of a general interchange of license, something greatly desired by the dental profession generally. It is hoped that the subject may soon be taken up by the two bodies and some amicable arrangement effected whereby the good cause may be continued.

## THE ODONTOGRAPHIC SOCIETY CLINIC.

It is seldom that special editorial mention is made of a society meeting, but the great clinic to be given by the Odontographic Society in Chicago, February 16-17, 1903, is to be such an unusually large and instructive one, we desire to call special attention of our readers to it and urge them to attend.

Five representative dentists from each state will perform clinics, and about forty states have already formally accepted the invitation.

The clinics will cover all phases of dentistry and there will be something there that will interest and benefit every dentist who attends.

Aside from the clinics, five original papers will be read, the essayists being Dr. E. C. Kirk, Philadelphia; R. Ottolengui, New York; A. E. Webster, Toronto, Can.; W. W. Evans, Washington, D. C., and H. P. Carlton, San Francisco, Cal.

More than one hundred dental firms will make exhibits also.

It is expected to be the largest dental meeting ever held and arrangements are being made for accommodation of from 1,000 to 2,000 visiting dentists. No progressive dentist can afford to miss it. Reduced railroad rates of one and one-third fare, certificate plan, will be made.

# NEW PUBLICATIONS

A MANUAL OF THE INJURIES AND SURGICAL DISEASES OF THE FACE, MOUTH AND JAWS, by John Sayre Marshall, M. D., former professor of Dental Pathology and Oral Surgery Northwestern University, Dental Department; former professor of Oral Surgery, American Dental College; member American Dental, Medical and other societies, etc.; president of the examining board for Dental Surgeons, U. S. Army.—S. S. White Dental Mfg. Co., Publishers, 1902. Price $5.50 net.

This is the second revised and enlarged edition of Dr. Marshall's most excellent book. The work has received merited recognition from the profession and has been quite generally adopted as a text-book by the American Dental Colleges. This new edition has been thoroughly revised, and much new material added. It is profusely illustrated and the text is well presented, occupying 704 pages. It covers the whole field designated and is the best work we have on the subject.

It is neatly printed and bound and is a credit to both author and publishers.

ANATOMY AND HISTOLOGY OF THE MOUTH AND TEETH, by I. Norman Broomell, D. D. S., Professor of Dental Anatomy, Dental Histology and Prosthetic Technics in the Pennsylvania College of Dental Surgery, Philadelphia.—P. Blakiston, Son & Co., Publishers, 1902. Second Edition. Price net, $4.50.

This popular work has been thoroughly revised and considerable new material incorporated. A chapter on Embryology of the Mouth, and a chapter on Anomalies of Tooth Form and Structure, and other descriptive matter and many new illustrations have been added to this second edition.

In the description of the teeth, the terms "superior" and "inferior" have been changed to "upper" and "lower," and the term "palatal" as applied to tooth surface, is changed to "lingual," and the term "alveolo-dental membrane" is used instead of "peri-dental membrane."

We are glad the author has made these changes, for the nomenclature in the various dental anatomies should be the same, or it becomes confusing. Each chapter has undergone careful revision, and a full and accurate presentation of the subject is made. The book is printed on extra calendar paper and the 337 illustrations, mostly photo-engravings, are not only exact, but present a beautiful appearance.

The book is a most valuable one for not only student, but practitioner.

### California State Dental Association Proceedings.

We acknowledge receipt of the transactions of the 1902 meeting of the California State Dental Association. In the volume will be found many instructive papers and interesting discussions characteristic of this thriving, progressive society. We extend our thanks for the favor.

# SUGGESTIONS

## CARBONIZING DIES.

**J. R. Watt.**

A carbon flame, giving out very little heat, can easily be made by saturating a pellet of cotton with the shellac which we use in the laboratory. When ignited and the alcohol is burned off there remains a carbon flame which will readily carbonize dies for crown and bridge-work or metal plate-work without heating the die.—*Review.*

## INSERTING GUTTA-PERCHA OR CEMENT.

**R. B. Tuller.**

To keep gutta-percha or cement from adhering to the instrument while inserting in a cavity, dip the instrument into talcum powder or powdered soapstone.—*Review.*

## REMOVING A PIN FROM A ROOT.

**R. B. Tuller.**

When a pin is broken in a root and is held firmly by the cement, it can be removed by grasping the end with a pair of pliers and using a strong, narrow chisel as a lever between the end of the root and the pliers, care being taken not to chip off any frail edges of the root. The operation is much like prying out a tack with a screw-driver. It is often necessary to remove the cement from the end of the pin far enough to insure a strong grasp with the pliers.—*Review.*

## QUICK METHOD OF DRYING CAVITIES.

**W. H. Schoening.**

To quickly and thoroughly dry a cavity prior to filling, apply a small pellet of cotton saturated with paraldehyde, and allow it to remain for a minute or two. Evaporate with hot air. Paraldehyde being more volatile than absolute alcohol, dries quickly.—*Review.*

## ROOT-CANAL DRESSING BROACHES.

**W. M. Whitlock.**

The smaller sizes of Swiss broaches, commonly known as jewelers' broaches, are ideal for dressing canals. The temper of these broaches is drawn and the ends squared by passing them through the pores of a short piece of hickory and sharpening on the oil-stone. A few fibres of unwaxed floss twisted on such a broach can be carried into a canal with the greatest facility. The square end catches the fibres of the silk and carries the dressing into the canal, while the polished surfaces of the broach permit of its being withdrawn, leaving the silk in position. In this manner a long fiber can be closely packed into a canal if desirable.—*International.*

## TO MAKE CEMENT FILLINGS MORE DURABLE.

**William Rollins.**

The ordinary oxyphosphate of zinc filling is so temporary that any change in its composition which will make it more durable is important. I have found a number of cements which have more lasting properties. One of these has now been tested for nearly twenty-five years. To make it, add oxide of iron in the form of the finest rouge to the oxide of zinc in the proportion of one part of the former to six to ten of the latter. The color is dark red, but this is no objection to its use in many places. The mixture may be quickly produced by shaking the two powders together in a test-tube.—*International.*

## TO ABSORB EXCESS OF MERCURY FROM AMALGAM FILLINGS.

**Dr. Howe.**

Dr. Howe uses precipitate of silver for taking up the excess of mercury from amalgam fillings, making the filling a little over full and covering its surface with the silver precipitate. The precipitate and excess mercury come away in form of a scale leaving a clean surface to the filling.

## TREATMENT OF PYORRHEA BY ELECTRIC RAYS.

**Dr. Strebel, of Munich.**

Dr. Strebel, of Munich, has introduced a new method of treating pyorrhoea by the application of electric rays. In cases of suppuration at the roots of the teeth he has directed a powerful electric light upon the alveolus. By this means irritation is set up which increases to violent inflammation, the after-effect being that the suppuration ceases, the looseness of the tooth entirely disappears, and full use is restored to it.—*Review.*

## OPENING OF PULP-CHAMBER AND ROOT-CANALS.

**W. M. Whitlock.**

In opening molar teeth it is my practice always to ignore a posterior or buccal cavity. If the tooth presents a compound anterior cavity, this can be utilized, otherwise an opening should be made through the anterior sulcus. It is desirable, in bicuspid teeth, to avoid going down through the center if possible, using an anterior or posterior cavity, lest the tooth be too greatly weakened. In entering, extreme care must be taken not to mar the floor of the pulp-chamber, for its natural conformation is our most valuable guide to the location of the canals. Without enlarging the external opening to any great extent, the inner end can be beveled to include the whole roof of the chamber. This is best accomplished by a round bur of medium size, either straight or right-angled, as the case requires.

In entering the anterior sulcus of a normal superior molar the drill enters the pulp-chamber very close to the center; that is, at a point midway between the three canals; then by hooking the bur under the palatine edge of the roof of the chamber and pulling up, always being careful not to mar the bottom of the chamber, that portion over the palatine canal may be removed so that the canal can very readily be entered with the broach. The same method is used buccally and a little posteriorly for the posterior-buccal canal, while, especially in extreme cases, considerable anterior cutting is required to enter the anterior-buccal canal.—*International.*

## THE MEASUREMENT OF ROOTS AND THE MARKING OF BROACHES.

**C. O. Kimball.**

The measurement of roots and the marking of broaches. It has been my habit for a good many years to have in my pocket a little scale marked to thirty-seconds of an inch, and in opening roots I measure them in all cases. I mark the instrument used for this purpose with a bead of shellac about three-quarters of an inch from the end. This is done by warming the instrument and touching with a stick of heated shellac. Formerly I used to mark the instrument with a file nick, but the objection to this is that it makes a weak point in the instrument, and a bit of rubber dam, which is sometimes recommended, is liable to slide; but with a bead of shellac on a probe you can go into a canal to the point desired and there stop with the greatest certainty. For instance, in a tooth where there is a marked opening at the apex, with a fine broach with a little hook on the end the exact length of the canal can be ascertained; then by marking a plugging instrument in this way, you can feel to a certainty that your filling-material goes to and no farther than the apex.—*Extract International.*

# SOCIETY

## ODONTOLOGICAL SOCIETY OF WESTERN PENNSYLVANIA.

This society will meet in Pittsburg, Pa., Tuesday and Wednesday, March 10th and 11th, 1903. It is expected to have the largest meeting of any in the history of the society.

The executive committee are arranging with some of our best lecturers to be in attendance, as well as a great number of exhibitors, making it the most successful meeting ever enjoyed.
C. B. Bratt, *President.*

B. M. Loar, *Secretary.*

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## INSTITUTE OF DENTAL PEDAGOGUES

At the last meeting of this body the following officers were elected for the ensuing year:

President—J. D. Patterson, Kansas City, Mo.
Vice President—H. B. Tileston, Louisville, Ky.
Sec'y-Treas.—W. E. Willmott, Toronto, Canada.

# AFTERMATH

## PERSONAL AND MISCELLANY.

Dr. F. P. Mather, Chester, Vt., has been appointed a member of the examining board by Governor McCullough.

Vulcanizer Explodes.—The vulcanizer in the office of Dr. F. F. Hoyer, Owosso, Mich., exploded and damaged the office. No one injured.

Dentist for Soldiers' Orphans' Home.—Dr. H. E. Hawk, Dayton, has been appointed dentist for the Soldiers' Orphans' Home, at Xenia, O.

Leaves Dentistry to Take up Religious Work.—Dr. Frank M. Swain, Cairo, Ill., has sold his dental practice and will enter a Bible school, expecting to make religious work his future occupation.

Dentist Suicides.—Dr. Jesse Magee, Rushville, Ind., committed suicide December 29th. He was the third member of his father's family who has suicided within a year.

Appointed a Dental Examiner.—Dr. E. H. Styles, Tuscon, Arizona, has been appointed a member of the state examining board by Governor Brodie.

Another Suicide.—Dr. S. A. Smith, dentist at Maysville, Ky., shot himself through the head. He was forty-five years of age. No cause is assigned for the act.

Will Become a Drummer.—Dr. F. J. Patterson, Mendota, Ill., has abandoned the practice of dentistry and will travel for H. D. Justi & Son, Chicago.

Burglars at Work.—Dr. Ralph Coleman, St. Louis, Mo., and Dr. Pennington, Louisville, Ky., have both lost considerable gold and other material through the work of burglars.

Dr. Lillian McCormick, Shubuta, Miss., has the honor of being the only lady dentist in that state.

Wound from Tooth Proves Fatal.—Anton Anderson, Chicago, while fighting, cut his hand on his opponent's teeth. Blood poisoning set in and the man died from its effects. Here is a warning to dentists: As it is so dangerous fighting in the customary style we would suggest that combatants adopt either woman's way, fighting with the tongue, or Mark Twain's suggestion of brick-bats at three hundred yards.

Fined for Practicing Without a License.—Dr. W. Barnett, Colorado Springs, Col., was fined $100 for practicing dentistry without a license.

Compulsory Care of the Teeth.—Kenosha, Wis., dentists, are interested in the move for legislation to provide for the free and compulsory care of school children's teeth. At the same time the proposition to include something of oral hygiene in the curriculum of the common schools is generally favored.

A Mexican Dental College.—A dental college has just been started in Mexico City. Its promoters will adopt the standard of recognized United States colleges. The Faculty has not yet been appointed.

Charitable Dental Work.—Dr. Addenbrooke, Milwaukee, is attempting to establish a city clinic for the poor, whereby they may obtain dental work free of charge. The idea is to interest manufacturers and others who will contribute to the support of the office and maintain it until it becomes self-supporting.

Connecticut State Dental Society Officers: Henry McManus, President; A. C. Fones, Vice-President; Charles McManus, Secretary.

Dentists in the Navy.—That a corps of dental surgeons may be established in the navy with the rank and pay of officers was the petition presented to the House committee on naval affairs a short time ago by a delegation of dentists from the National Dental Association. There are a limited number of dentists in the navy at the present time, but they are rated as yoemen. Several bills are pending in the House which place the practice of dentistry in the navy on a professional footing, and it was in the interest of these bills that the delegation appeared.

Asks that Suit Be Dismissed.—A letter has been received by the clerk of the superior court from Karl Beutelrock of Munich, Germany, against whom State's Attorney Deneen has brought mandamus proceedings to take away his title of doctor of dentistry and a license which was issued to him, purporting to be signed by the president and secretary of the state board of dental examiners. Beutelrock says he is too poor to come over and defend himself against the suit, that he cannot afford to get a local attorney and that he never intended to do anything wrong, so he asks the State's attorney to dismiss the suit and return his diploma and other papers which were taken from him by the American consul, Dr. Wormann, in Munich.

A Sign of the Times.—The sign of a dental firm of Exira, Iowa, now reads Oldaker & Hammer, Mr. Oldaker having taken a partner from Grundy Center. Evidently this firm believes in having names to suit the business.

More Newspaper Advice.—Mrs. X. Every man, woman and child who has pocketbooks that hold things should go twice a year to a dentist. If the teeth are looked over occasionally and the cavities filled before they are large, the teeth will be kept in excellent condition.—Mme. Qui Vive.

Dental Journal Plant Destroyed.—The *American Dentist* suffered the loss of its December issue, plates, engravings, etc., by fire, on December 23rd.

One Thousand Dollars for Hurting a Patient's Feelings.—A Boston dentist has got to pay a patient $1,000 because he was not considerate enough of her feelings while extracting her teeth. There have been instances where dentists have been accused of too much consideration under such circumstances, so that it seems that the poor dentists are blanked if they do and blanked if they don't.

Dentists to Determine Age of Child Laborers.—A novel bill to stop child labor has been planned in Aurora, Ill. The Aurora Charity Council is having drafted a bill by which it will be left to a dentist as to whether certain children employed in factories are over or under the legal age. The dentist is to examine the teeth of the children to settle the question. He is to issue a certificate covering the case of each child examined. Employers, according to the proposed bill, are prohibited from hiring persons without certificates from dentists showing that they are over 16 years of age. Senator Evans and Representative Bush are to have charge of the bill in the forthcoming session of the General Assembly.

Fortune in Elks' Teeth.—Eight hundred elks' teeth in the grave of an Indian chief, all splendid specimens and susceptible of mounting, was the wonderful find by a Philadelphia curio hunter named Zimmerman, who has been gathering relics along the canyon of the tortuous Snake river for several months. Zimmerman dug into the grave, which was in a wild, barren and remote country along the Snake river, above Lewiston, Idaho. Some distance down he encountered several small bones, which on examination proved to be magnificent specimens of elks' teeth, and on scooping away the earth with his hands he found that a loose tunic wrapped around the ex-chief's skeleton had been literally crammed with teeth—the best obtainable in the days when elk were plentiful. Zimmerman took his find to Lewiston for shipment to Philadelphia, keeping very quiet about the discovery. One man to whom he confided the secret in Lewiston offered him $10 apiece for the 400 with the red streak.

Could Not Afford to Lose His Nerve.—"The first thing necessary," said the dentist, as he probed around the victim's aching molar, "is to kill the nerve." "No you don't," groaned the patient as he jumped from the chair. "I'll let the old tooth ache rather than have my business everlastingly ruined."

Note—He was an insurance agent.

Standing of American Dentists.—Dr. Thorvald Kiaer, of the University of Copenhagen, Denmark, has been visiting American dental colleges for the purpose of studying methods employed here. In expressing his views he said: "Your dental institutions are superior to those of Europe, and American dentists are the best in the world. Perhaps I should qualify this statement by saying that they are beyond all others in the actual practice of the profession; that is, on the mechanical side, and in appliances and equipment their superiority is beyond question. But when we consider the question of scientific knowledge, apart from practical cleverness and manipulation of instruments, my belief is that the professional men of the Old World rank their brethren in the United States. The fact that we come here to learn of your people is the highest compliment that can be paid to American genius, and I go home elated with the idea that I have learned many valuable things that will be of great use to me on my return, and for which I shall receive the plaudits of my colleagues."

DENTIST WILL HARNESS THE SEA.—An invention to utilize the waves of the sea in producing light and power has been perfected, it is said, by Dr. D. K. Bryson, a Pittsburg dentist, and a company is being formed to put the machine into practical use. The promoters of the new power company assert that the machine will be set up at Young's pier, Atlantic City, and that it will be in actual operation by June 1.

DENTISTS WILL HAVE A STATE BLACK LIST.—The Central Dental Association of New Jersey is preparing a "black list" for the use of dentists throughout the state.

THE E. K. WEDELSTAEDT DENTAL CLUB is the name of a new dental society formed December 18th, at Cedar Rapids, Iowa. The officers elected are: President, W. R. Clark, Clear Lake; Vice-President, I. B. Conzett, Dubuque; Secretary, William Finn, Cedar Rapids. Membership is limited to thirty.

WHERE THE PAIN CAME IN.—"Painless dentistry!" snorted old Hunks, who had just had a tooth extracted and was opening his pocketbook with extreme reluctance. "Painless! H'mph! You don't seem to think it hurts to have to pay $2 for two minutes' work!"

INDIANA DENTAL LAWS TO BE AMENDED.—The Indiana State Dental Association will ask the coming Legislature to enact a law requiring examination of applicants for registration on presentation of diplomas. The Legislative committee consists of John Q. Byram, Horace M. Thompson and George Edwin Hunt. The change in the law governing the practice of dentistry is not to affect those now engaged in it, but the purpose is to shut out incompetents in the future.

A DENTISTS' PARADISE.—A correspondent in Honululu, H. I., writes: "Hawaii is the dentists' paradise. The reason that the territory is not flooded with members of this profession is because the prospects are not appreciated elsewhere. Those dentists who are so fortunate as to be located in Hawaii are thriving. Their practice is steadily increasing. They are becoming wealthy. The demand for dental work is due to the Hawaiians desiring to remove all traces of one of their ancient customs.

"It was formerly the custom among Hawaiians, and in certain localities it is observed to this day, to go into mourning for people by knocking out the front teeth. Whenever a relative or dear friend died a front tooth would be sacrificed. Four teeth was generally the limit for one person to destroy. The appearance caused by the absence of the front teeth was, in many instances, grotesque, especially when the eye teeth were of more than average size. For generations this custom was one of the most common, as well as important. Nothing was thought of it. Old and young alike would be called upon to make the sacrifice. The Hawaiian race has naturally beautiful teeth, and this unnatural custom disfigured the men and women alike. Within recent years the custom has disappeared. The members of the younger generation have adopted the manners and ways of the white race. One of the earliest things they saw was the very apparent fact that their appearance would be greatly enhanced if they were provided with front teeth. A demand for delicate dental work resulted. The young girls were especially eager to have their missing teeth replaced.

"The demands were varied, and in the majority of instances expensive. The work was of a very delicate character. The cost did not deter them in the least. The result has been that within the last three or four years a girl with her front teeth missing is a very uncommon sight in the city of Honolulu. The desire to have the error of the early custom remedied is not restricted to the younger generation. Older people have had the same dental operations performed for them.

"The candidates for new teeth seem unlimited. Every dentist in Honolulu is kept busy. In districts on the other islands the demand for new teeth is not so general. A traveling dentist would coin money if he could but catch the fancy of his patrons. It does not follow, however, that all Hawaiians are minus their front teeth. Thousands of them were never subjected to such painful operation, and invariably they are the possessors of magnificent teeth."

A JOYOUS OCCASION.—Stubb.—"Our baby has new teeth."

Penn.—"Well, there is no expense about a baby getting new teeth."

Stubb.—"No expense! Why, man, my wife has sent away twenty prepaid telegrams announcing the fact to her friends."

OFFICERS ELECTED.—D. C. Herrick, Jackson, Cal., has been elected President, and Dr. F. G. Baird, San Francisco, Cal., Secretary, of the California State Board of Dental Examiners.

CLEVELAND, O., DENTAL SOCIETY OFFICERS FOR 1903.—President, Dr. F. J. Spargur; Vice-President, Dr. J. W. McDill; Secretary, Dr. W. C. Ramaley; Treasurer, Dr. Frank Acker.

PONDEROUS TEETH.—Elephant tusks are, of course, the largest known teeth, and the tusks of the wild boar are no mean weapons of offense. One does not perhaps associate the teeth of the hippopotamus with the idea of great weight. Yet a pair of hippopotamus teeth have lately made their appearance in the smoking-room of a popular club in St. James

Square, their weight being 3 pounds 12 ounces, and 3 pounds 11 ounces, respectively. I should say, judging from appearances, they measure a good 15 inches round the outer curve. They are apparently hollow, and are yellow in color, with a striated pattern of longitudinal ridges.

ONLY A SLIGHT MISTAKE.—High prices in frontier towns was the subject under discussion recently, when a man who had recently returned from the gold district in the Klondike told the following story:

"People get used to paying big money for trifles, and $2 for a box of sardines or $5 for a pound of baked coffee become reasonable prices. I kicked once upon a time because the price asked was too small. It was like this: I had a jumping toothache. I was nearly wild with it when I went to the shanty where I was told there was a dentist. A rough looking fellow told me that he was it, and I asked him to draw my tooth. He looked me over, got his forceps fastened on my tooth, and yanked it out after a couple of hard twists.

"'How much?' I asked.

"'Well, $2, I guess,' said the dentist.

"I paid him, although my jaw still ached pretty badly.

"'That's the cheapest thing I've seen around here,' I said.

"'Well,' he said, 'I thought I'd make it low, because on account of the bad light I pulled the wrong tooth.'

"I had to go the next day to have the bad tooth out, and he made matters square by charging me $10."

INJURED BY ELECTRIC SHOCK—A WARNING TO DENTISTS.—L. M. Ellis, dentist, Lafayette, Ind., was nearly killed recently by an electric shock. While engaged in doing some dental work, a lady being in the chair, he reached over to turn the gas fixture out of the way. In one hand he held his dental engine. As soon as he touched the fixture, which extends from the wall, he was so badly shocked that he was rendered unconscious. His office girl heard him fall and rushed in and released Mr. Ellis' hand from the gas fixture. It was some time before he came to his senses and then he could not realize what had happened until he commenced to experience a sharp pain in his right hand. The member was severely burned and it will be some time before he will be able to use the hand. Dr. Ellis has the impression that when he caught the gas fixture he completed the circuit with the instrument in his hand.

WISCONSIN DENTAL SOCIETY elected A. Gropper, President; W. L. Griffiths, Vice-President; A. F. Kortebein, Secretary and Treasurer; W. A. Perkins, Member of Board of Censors.

ODONTOGRAPHIC SOCIETY CLINIC.—This great clinic, to be given in Chicago February 16, 17, will be the biggest dental meeting ever held. No one can afford to miss it. Five papers, over two hundred clinics and one hundred exhibitors. Railroad rates one and a third fare, tickets good going Thursday, February 12; good returning February 20th.

HONORARY MEMBERS.—At the recent meeting of the Ohio State Dental Society, Dr. E. C. Kirk, Philadelphia, and Dr. W. H. Stacy, Covington, Ky., were elected honorary members.

BORES.—At dental meetings there are always some people who have [illegible] compelled to wander over some [illegible] from the time he left the [illegible] clothes of dentistry, [illegible] is relating something new, and calls it "my method." He forgets he [illegible] not talking to the freshman class in a dental college, but practitioners [illegible] stead. He is bore No. 1 at dental meetings. Bore No. 2 is the man who jumps up when anything [illegible] brought forward, and describes how he did exactly that way as far back as the fifties. Nothing can get [illegible] wants to adjourn [illegible] afraid [illegible] *Western Dental Journal.*

A NEW DENTAL JOURNAL.—[illegible] bimonthly [illegible] and [illegible] editors are [illegible] Success to the active infant.

DENTAL JOURNAL DISCONTINUED.—*The Dental World*, published in the interest of the Georgia State Dental Society, and edited by Dr. W. H. Weaver, has been discontinued.

A NEW DRESS [illegible].—*The Dental Cosmos* has made a radical change in its appearance. It is now double column, has new cover page, and new dress in general. [illegible] the editor and publishers have a right to feel proud.

A GOOD COATING FOR LABORATORY FLOORS.—An Austrian material for preventing the raising of dust on sweeping proves to be cottonseed oil. In a test at Vienna it was found that floors oiled twice a year could be swept [illegible] without any [illegible] of dust, and the material was recommended for all rooms receiving many persons, as well as for laboratories, libraries and other places to be kept scrupulously dust-free.

OHIO STATE DENTAL SOCIETY OFFICERS.—J. B. Beauman, President; J. F. Stephan, First Vice-President; W. T. McLean, Second Vice President; S. D. Ruggles, Secretary; C. I. Keely, Treasurer.

AMERICAN DENTISTS WANTED IN MADIGASCAR.—There is an opening here for an American dentist. At present, there is only one competent practitioner—a native—for the whole island. The governor general, in reply to a letter on the subject, says that any dentist wishing to settle in this island would not have to undergo an examination, apply for French diploma, or be subjected to any particular formality, except that he would be under the control of the board of health in all that concerns his professional status. He would have to pay the license, which, for Tamatave, is $10 per annum. This, the chief port, is the most eligible location. General Gallieni has given me the assurance that any American coming here would receive a hearty welcome from the authorities and every attention in facilitating business.

For an American settling here, a knowledge of French, though not necessary, would render life more agreeable. The cost of living for a single man in such a position would be $80 a month, or for a married couple $100. The professional fees to which this place is accustomed are $1 for consultation or for extracting a tooth. The higher dental operations, of course, are open to all the professional charges adopted elsewhere.

The amount of business would not be enormous, but probably quite enough to fully occupy the time of one man. There are bimonthly mails between Tamatave and all other parts of the world. The cost of a passage from Marseilles to Tamatave is $229 first class and $160 second class.

William H. Hunt, *Consul.*

Tamative, *October 10, 1902.*

Quit the Practice of Dentistry.—W. P. Moore, Humbolt, Neb.; R. S. Childs, Algonquin, Ill.; Dr. Swain, Kewanee, Ill.; C. B. Roe, Buchanan, Mich.; E. Barnett, Springfield, O.; W. A. Whiting, Dayton, O.

Recently Married.—E. Breck, Springfield, Mass., to Miss Grace Taylor; Dr. Charles Brecheisen, Ada, O., to Miss Bertha Dobbins; Dr. H. W. Talley, Petersburg, Va., to Miss Bessie Birdsong; Dr. Hartman, Campbell, Cal., to Miss Mildreth Spencer; Dr. S. E. Wolfe, Guyamas, Ariz., to Miss Camila Canez; Dr. W. H. Hawley, Rantoul, Ill., to Miss Sadie Randall; C. R. Uhle, Bairdstown, N. J., to Miss Gertrude Kram; Dr. C. W. Moody, Nashville, Tenn., to Miss Marie Sugg; Dr. Paul Lentz, Quincy, Ill., to Miss Emily Steinbach.

Died.—Drs. Frank Baden, Richmond, Va.; E. W. Weis, Ottawa, Ill.; A. E. Smith, Jamestown, N. Y.; O. T. Hansen, Macomb, Ill.; G. A. Andrews, Lyons, N. Y.; R. H. Townsend, Washington; Wm. Dougless, Detroit, Mich.; J. S. Wright, Cedar Rapids, Ia.; Giles Decker, Corunna, Mich.; A. W. Howland, Lawrence, Mass.; Chas. F. Howell, Rochester, N. Y.; Jacob A. Mayer, New York; W. C. Chapman, Hartford, Conn.; Chas. B. Baker, Bridgeport, Conn.; G. W. Kendall, Waco, Tex.; Frank Stangel, Manitowoc, Wis.

Loss by Fire.—Drs. E. O. Pigeon, Washington, D. C.; F. A. Hefner, Monticello, Ind.; — — Killmer, St. Catherines, Can.; John Ramsden, Philadelphia; E. A. Taylor, Chicago; J. K. Campbell, Waco, Tex.; Duncan, Butler, Pa.; J. G. Atterberg, Tecumseh, Mich.; W. A. Murray, East Toronto, Can.

Recent Patents of Interest to Dentists.—713,273, dental matrix crown, Isaac H. Alexander, Camden, S. C.; 713,282, dental chair, Arthur W. Browne, Princebay, N. Y., assignor to S. S. White Dental Manufacturing Co., Philedalphia, Pa.; 713,103; dental engine, Frank Hurlbut, Chicago, Ill.; 713,453, tooth crown burnisher, Jason D. Kinsley, Lisbon, Iowa; 713,319, dental tool holder, Charles A. Lundberg, assignor to Consolidated Dental Manufacturing Co., New York; 713,469, Dentistry, George

G. Martin, Pecos City, Texas; 713,470, dental forceps, Wesley T. Martin, Yazoo City, Miss.; 713,330, Mold for forming artificial teeth, Michael J. Murray, assignor to Consolidated Dental Manufacturing Company, New York; 714,105, Dental heater, George Evans, assignor to Evans Company, New York; 713,683, tooth brush, Hower Poling Curtin assignor of one-half to N. Poling, Millstone, W. Va.; 713,826, dental handpiece, John D. Wilkens, assignor to Dental Protective Supply Company, Chicago, Ill.; 714,373, electrical dental furnace, Ashley M. Hewett and J. C. Smith, Chicago, Ill.; 714,613, handpiece for dental engines, Adolph W. Schramm, E. B. Wilford and B. Fulton, assignors to Electric Dental Manufacturing Company, Philadelphia, Pa.; 715,005, fountain spittoon, John, C. Blair, Louisville, Ky.; 714,901, toothpick, James R. Hills, New York; 714,694, adjustable wall bracket, Gustav Holtz, Jamesburg, N. J., assignor to American Dental Manufacturing Company, of New Jersey; 714,938, dental oven, John A. McClelland, Chicago, Ill.; 715,216, means for producing dental amalgum, A. A. Shaw and R. A. Stevens, Cambridge, Mass.; 715,182, dental flask, Wm. Waegel, Reading Pa.; 714,983, dental instrument, Cecil P. Wilson, Newton, Mass.

STERILIZING OF THE HANDS.—The best method for preparation of the hands that I have employed is the one that has been so well described by Dr. Robert F. Weir. It consists in sterilizing the hands by means of nascent chlorine gas. The surgeon takes in one hand a heaping teaspoonful of commercial chloride of lime and an equal quantity of powdered carbonate of sodium. If water is then poured into the hand, the two powders make a paste in which a reaction rapidly sets free chlorine gas, and, if this mixture is thoroughly rubbed over the hands for two or three minutes, we get a very complete sterilization of the skin without much injury to the epithelium.—*Exchange.*

SEE HOW WE GROW.—Nearly four thousand new subscribers have been added to the DENTAL SUMMARY list for 1903.

KIND WORDS FROM INDIANA.—Please renew my subscription for THE DENTAL SUMMARY for 1903. It is the *best* and most up-to-date dental journal I have seen, and the best of it is *it is practical.*—DR. P. B. CLARK, *Purcell, Ind.*

LOS ANGELES ASSOCIATION OF DENTAL ALUMNI elected J. D. Moody, President; H. D. Requa, Vice-President; S. M. Crow, Secretary and treasurer; J. F. Cook, Corresponding Secretary.

THE DENTAL SUMMARY

VOL. XXIII MARCH, 1903 No. 3

## CONTRIBUTIONS.

### PROSTHODONTIA.

BY GEORGE H. WILSON, D. D. S., CLEVELAND, OHIO.

Professor of Prosthesis and Metallurgy, Dental College, Western Reserve University.

The reason for selecting this broad subject is to have latitude to make a few general remarks and to describe a method in particular.

The following definition for Prosthodontia differs somewhat from the one commonly given, but we think more clearly expresses the idea involved:

Prosthodontia is the science, art and esthetics of replacing a lost or impaired dental organ or organs and their associated parts, with an artificial substitute.

It is unfortunate that many of our words convey various ideas, thus making it necessary to state our meaning in still other words. By science, we mean classified knowledge; but we cannot so easily dispose of art. The Standard Dictionary defines Art as: "The skillful and systematic arrangement or adaptation of means for the attainment of some end. The practical application of knowledge or natural ability; skill; dexterity; facility; power. The arts are distinguished as the esthetics or fine arts, or arts of beauty, which call for the exercise of taste and imagination, and which furnish the sphere of the artist; and the useful, industrial or mechanic arts, or arts of utility, which require chiefly mechanical labor or skill, and which engage the ingenuity of the artisan." The same authority defines esthetics as: "Pertaining to beauty, taste or the fine arts; artistic. Appreciating or loving the beautiful. The philosophy of the beautiful; the principles underlying beauty."

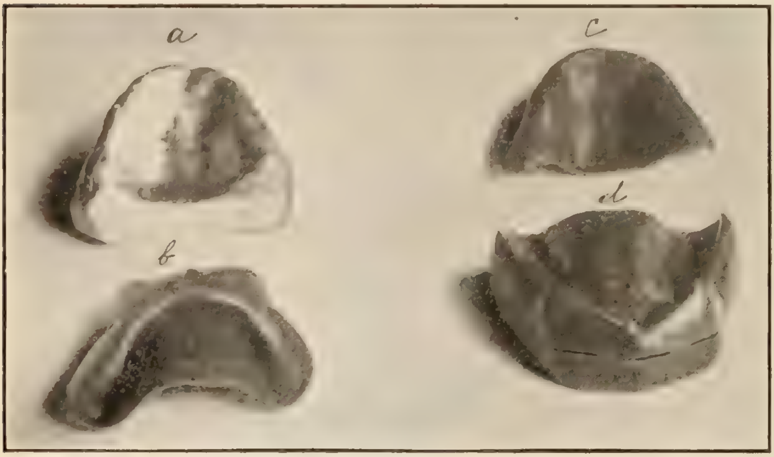

Fig. I.

Professional definitions are primarily useful for instructing the student, and as the American youth is far more impressed with the utilitarian art than the esthetics of the profession upon which he is entering, it seems to me well that we should emphasize the latter.

All must concede that Prosthodontia is a utilitarian art, and many cases tax to the utmost the ingenuity of the artisan. All should recognize that an artificial substitute has a double function: first, mechanical, for mastication and enunciation; and second, esthetic, to restore the contour and harmony of the lower third of the face. It is true that the loss of the teeth affect the middle third of the face, but in such a way that the contour can never be restored.

The term Prosthodontia, as suggested by Dr. Ottolengui, is possibly the best name for this department of dentistry, but is too limited in the literal meaning of the word, as the loss of the teeth will eventually result in the loss of the alveolar processes, and that, from an esthetic consideration, is of far greater importance. Therefore we deem it necessary to insert in our definition the clause, "and their associated parts."

We often read and hear it said that vulcanite and gum section teeth are responsible for the deplorable condition into which *mechanical dentistry* has fallen.. That is certainly a professional fallacy, for it is not things but man that is responsible for all achievement in the body politic.

It is lamentable that so few men endowed with the artistic sense have, in the past, been engaged in this necessary work. While our profession as a whole is becoming more enlightened and appreciative of the beautiful in our dental productions, there are two great sources of danger extant: The pernicious habit (a charitable term), of sending plaster casts out to dental laboratories rather than patients to prosthodontists is a modern evil, which I believe will soon react and be its own destroyer. The other great danger is the seemingly growing demand for cheap material. It is a subject for earnest thought when our leading manufacturers (and they are excellent barometers of the profession), announce that they have put upon the market a cheaper rather than a more perfect article. A recent illustration of the fact is the advertising of diatoric teeth. The remedy for this is that the teachers, editors and society workers shall not only advocate, upon all proper occasions, but shall use only the highest grade material and methods, seeking always for the best results.

The prosthetic scapegoats, gum section teeth and vulcanite, are worthy of further consideration.

On inquiry among our traveling dental dealers, I learn that fifteen and twenty years ago four or five sets of gum section teeth were used to one of plain teeth; that now the ratio is reversed. This, I suppose, is in response to that law of nature—the survival of the fittest. To dispose of the consideration of them I will place these teeth in a category with the so-called "mush bite," and say that they should never be used in the construction of a full denture and but rarely in the construction of partial dentures. They should be an abomination in the sight of any lover of the beautiful in the art of the prosthodontist.

Vulcanite as a base for artificial dentures certainly has its disadvantages, also its advantages; and inexpensiveness is probably the greatest of its advantages. Because of the necessary expense for gold and continuous gum dentures, they are beyond the means of most people requiring dental substitutes. There is an imperative demand for a material that will render a reasonable service, at a nominal expense; this vulcanite does.

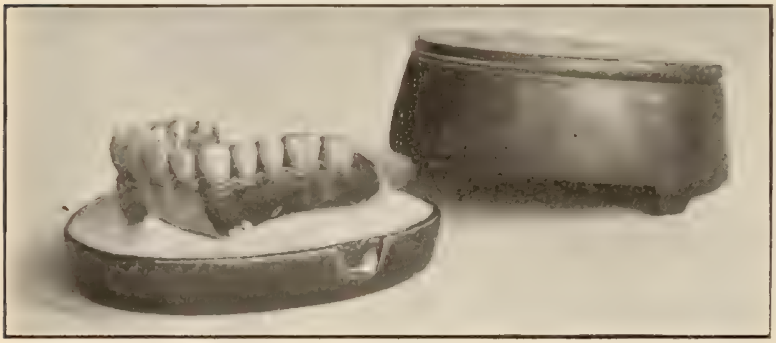

FIG. II.

We should not condemn the material, but we can justly criticise the method of manipulating it. It is regrettable that the best methods for working the material have never come into general practise; but, rather, our best men have tended to adopt the cheap, short cut, indifferent, unscientific methods of the common dental parlors. Believing the time is right for a radical change for the better, in the working of this material, I present to the profession a method which I know will give vastly improved results and is not unreasonably complicated. I make no claim for priority or for credit, unless it is in using what influence I can for the improvement of this much abused material.

There are rather three methods involved in this completed one which I shall present.

First: A vulcanite base plate, which has been used to a limited extent for many years, but very forcibly brought to the attention of the profession in an article by Dr. Ottolengui about one year ago.

Second: The string method for festooning, which was brought to my attention by a journal article many years ago.

Third: Heavy tin foil finish, such as is described by Dr. W. W. Evans in his article upon zylonite in our text books, and also demonstrated by Dr. Gritman at the Pittsburg meeting of the Institute of Pedagogics.

Obtain a perfect impression, and make plaster cast. This cast is covered with No. 6 tin foil, the foil being fastened to the cast by sandarac varnish. (See "a," Fig. I.) A pattern plate is formed over this tinned cast of one thickness of pink wax. (See "b," Fig I.) And by aid of a hot spatula sealed to the cast. Flask and pack with black or uncolored rubber. It is necessary to soften the wax before opening the flask, so as not to displace the foil; also to soap the foil to prevent adhesion to the vulcanite. The best results are obtained by vulcanizing the rubber at 300 degrees F. for three hours; allowing thirty minutes of this time for raising to the required temperature. This base plate is filed to give the required peripheral outline, and scraped upon the labial, buccal and lingual surfaces to make a clean-cut surface for attaching the remaining rubber of the denture.

After removing the tin from the mixillary surface, the base plate, as shown in "c," Fig. I, is ready to try in the mouth. This marks the first advantage of this method. If the base plate cannot be properly adapted to the mouth, it implies that the finished plate will not be a success, and the operator should take another impression and correct the former error.

When a perfect fitting base plate has been obtained, the articulating model should be made by placing the wax upon this base plate and adjusting to the mouth until the contour of the features is restored, and then mark the median and high lip lines. (See "d," Fig. I.) Dr. Ottolengui has pointed out that a great advantage is obtained by thus securing perfect articulating models.

The teeth are mounted and the wax smoothed (see Fig. III), when the denture should be again tried in the mouth.

In this I differ from Dr. Ottolengui, as he claims it is not necessary to try the denture in the mouth at this time, as a perfect articulating model was obtained. I have learned that some very excellent workmen sometimes make mistakes in mounting upon the articulator, even with the supposed perfect models. Let us suppose a mistake has been made, and upon trying in the mouth one side strikes a little harder than the other; this is easily corrected by warming the wax upon the prominent side and replacing in the mouth, when a closure of the jaws will equalize the pressure. We may find the patient has protruded the chin, a very difficult thing to prevent in some cases; if so, it is far better to make the discovery now than when the denture is completed. Having the piece perfectly articulated and contoured, we are now ready to perfectly reproduce the wax form in vulcanite, which cannot be done by the filing and scraping method; but can be by the tin method. Before applying the tin foil we will apply the string to aid in keeping the contour, the festoon of the gum, and as an aid in flasking.

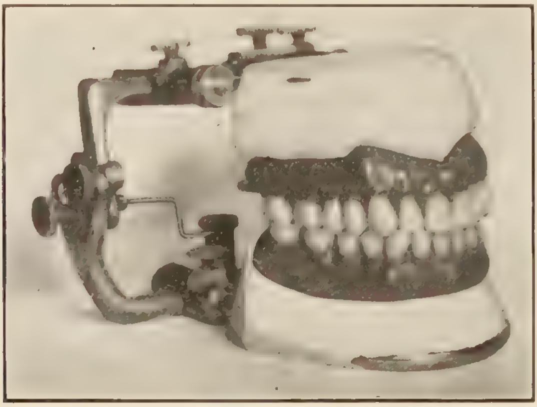

FIG. III.

In examining Fig. II it will be seen that a portion of the tin foil has been removed from the right buccal surface. This is for the purpose of showing the string at the cervical portion of the teeth and at the periphery of the plate. The object of the string at the cervical portion of the teeth is to give the proper thickness to the margins of the gum. The string used for this purpose is waxed dental floss, twisted very hard, doubled, and twisted again. In doubling, the loop will show the direction in which it should be twisted the second time. Wax the string well with softened wax. The string is applied by grasping the left heel of the plate, with the occlusal surfaces of the teeth upward, between the fingers and thumb of the left hand; place one end of the string at the distal surface of the second molar, pressing it gently into the wax; outline the margin of the gum, using the wax spatula to carry the string well into the interproximal spaces. The string at the periphery of the plate should be twice the size of the one just applied.

The next step is to cover the buccal and labial surfaces with a strip of No. 60 S. S. W. tin foil. This foil was placed upon the market for celluloid work and is applied in the same manner, only by the use of granular gum it is not necessary to stipple. A few words of instruction, however, are necessary in applying the tin over the strings. The No. 3 instrument of the Evans set of carvers is especially adapted for adjusting the tin foil. The ivory ends are much better than steel ones. The strip of foil is placed over the wax and teeth and pressed into position with the fingers as closely as possible. Hold the work in the left hand, seize the ivory-pointed instrument by the hand grasp, rest the thumb upon the occlusal surface of the second molar, and burnish the tin closely to the tooth and against the festoon string. Continue this operation with all the teeth. With a sharp chisel cut away the excess tin upon the teeth to within one-sixteenth of an inch of the festoon string. After readjusting the tin about the teeth, the metal must be burnished over the string to give the desired thickness of the gum and the contour of the festoon. This is done by holding the plate and burnisher in the same manner as before. The instrument must extend about one-sixteenth of an inch beyond the string and at the same time must rest upon the body of the tooth while pressing the tin down over the festoon string. By this means a proper thickness and contour is given the margin of the gum, without forming an unnatural bead edge. After all the teeth have been thus treated, the position of the plate should be reversed in the left hand, so that the thumb of the right hand may rest upon the periphery of the plate while burnishing the tin from the festoon towards the edge of the plate. With a pair of sharp curved scissors trim the tin flush with the marginal string, but do not permit it to overlap. The case is now ready for tinning the lingual surface. Use No. 60 foil, and if the vault is a high one, slit the tin from the middle of one side to the center. Place the inner end of the slit over the middle of the vault, and one edge of the slit along the raphe to the incisor teeth; press the side of the foil gently against the wax and teeth; press the other half of the tin in the same manner into position, permitting the slit portion to overlap the first half. With sharp scissors trim the tin nearly down to the teeth.

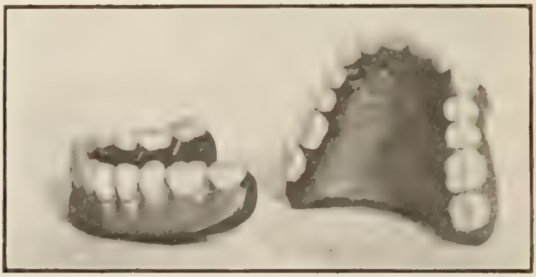

FIG. IV.

Remove the foil and place it upon a plaster or metal cast having well defined rugæ, burnish the rugæ into the foil. Remove the foil, turn it over and fill the impressions of the rugæ with wax, also smear the remainder of this surface with a thin layer of wax; now replace this waxed surface against the vault of the plate and nicely adjust with the fingers. The tin must be securely burnished against the teeth. If desired, the lingual contour of the teeth may be reproduced by burnishing their forms in the tin. (See Fig. IV.)

Flasking is the next operation. A narrow rim flask is imperative. The star flask will do very well, but one made by the Cleveland Dental Manufacturing Company, from patterns furnished by the writer, will better serve the purpose. (See Fig. II.) This flask is designed to be used with the Donham clamp.

Fig. II will show that the case is flasked at the periphery of the plate, so that the teeth and tin foil shall be in the same half of the flask when opened. As the base plate is vulcanite, it is unnecessary to remove the cast from the articulator, but save the articulator with its plaster forms upon which to prove the articulation after vulcanization; also to perfect the lateral movements. It will be necessary, however, to perfectly fill the base plate and the first half of the flask and then wait until the plaster has stiffened in each sufficient to sustain the weight of the plate when it is set in the proper position. Care must be exercised to perfectly fill the second half of the flask. The flask should be placed in cold water and brought to the boiling point to insure sufficient softening of the wax so as not to displace the tin. The strings must be removed with the wax; but soaping the heavy foil is not necessary. Excess places should be cut, and care used to have the case well packed. Vulcanize the same time and temperature as the base plate.

The plate, after being removed from the flask, is washed to remove the plaster, when the foil can be easily stripped off. The periphery of the plate must be filed and sand-papered, and a sharp chisel used to trim about the teeth, when it is ready to be buffed with felt and pumice and polished with a soft brush wheel and whiting.

The claims for this method are that we have perfect vulcanization, with a hard, metallic surface finish. The base plate being of black or uncolored rubber, there is little danger of mercurial poisoning (if there is any at any time). Having the metallic surface finish, it is more easily kept clean. It reproduces the rugæ of the mouth, which nature designed to assist in deglutition and enunciation.

This method every way meets the requirement of mechanics for securing a perfect adaptation to the maxilla and articulation. It meets the requirements of esthetics, because if the operator has the artistic sense sufficiently developed to properly model the wax, he can perfectly reproduce the required form in vulcanite. In beauty and durability it is only surpassed by porcelain, and that because of the inherent qualities of the material.

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# PROSTHETIC APPLIANCES IN THE TREATMENT OF GOMPHIASIS.

BY B. J. CIGRAND, B. S., M. S., D. D. S., CHICAGO.

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Recently, while attending the Northeastern Dental Association, I took occasion in discussing a paper on alveolar troubles, to express an opinion relative to prosthetic procedures in the disease known as pyorrhea alveolaris, and the method provoked commendable discussion. Believing that this feature of prosthetic work is essential in the treatment of both pyorrhea alveolaris and gomphiasis, I have decided to delineate the required attachments together with a description of the medicinal agents employed in the relief and cure of this character of disturbances.

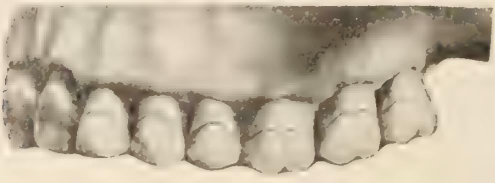

DIAGRAM I.
Case of Pyorrhea Alveolaris.

While pyorrhea alveolaris is classed among diseases, gomphiasis must be termed a physical indication, since it is a condition accompanying age, though in rare cases it may be noted in middle aged persons. Gomphiasis presents the same relation to the physical economy, that gray hair does—being indicative of age—but not necessarily so. In gomphiasis the teeth are loose and they seldom present decay, and are of a cream yellow shade. There are no signs of alveolar absorption or presence of waste product or pus. The teeth are generally long and possess ill-shaped cusps; never bell shaped, but rather of cubic outlines. My attention was directed to this abnormality something like twelve years ago, and in 1892 I incorporated in my "Compendium on Prosthetic Dentistry" the study and treatment of gomphiasis; making it a part of the freshmen course, and of late years added it to the senior curriculum.

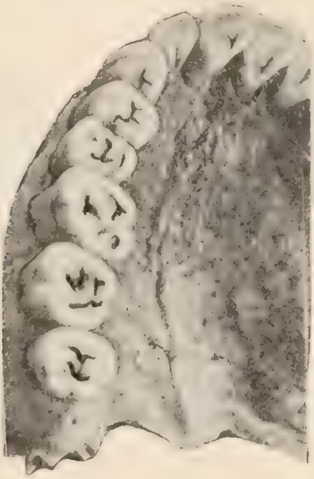

DIAGRAM II.
Case of Gomphiasis.

Gomphiasis is so akin in its manifestations to pyorrhea alveolaris that many practitioners make the mistake in treating it with medicines adapted to pyorrhea, and meeting with ill results are apt to pronounce it a stubborn case of gingivitis, and invariably recommend the extraction of all the teeth, substituting artificial ones, when it remained within the prosthetic province to restore and save the natural dental organs. The extraction of teeth in such a case is entirely contra-indicated, in as much as appliances will give stability to the affected parts, and they will speedily yield and become normal in character.

I have observed that cases of gomphiasis are mostly found in people of the lymphatic temperament and cannot be termed an abnormal condition, inasmuch as the osseous structure of their being is of a less dense or firm nature. The gums are naturally flabby and the entire system is rather of a lower form. We may readily recognize this temperament by the following general and special characteristics:

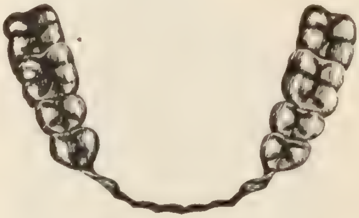

Diagram III.
Gold Cusps and Bar.

*The Lymphatic Temperament*—To the ancients known as the phlegmatic. This temperament might be called stomachic or digestive. External indications, round and well-developed jaws. Constitutional outlines, fleshy and bulky, general movements slow and sluggish. Hair, coarse, straight and drab. Fingers, short, flabby and cold. Favorable characteristics, contented, agreeable and jolly. Unfavorable characteristics, sluggish, lazy and unenergetic. Example of type, Esquamaux. Human example, Henry VIII. of England.

The primal requisite in treating a true case of gomphiasis rests in rendering stability to the troubling teeth, and in granting this mechanical aid the basic principle of surgery is observed in that we have afforded "REST" to the injured or ailing part. So that the essential event sought is to establish a tightness of these teeth by mechanical means and hence afford nature the opportunity of restoring the wasted parts and rejuvinating the affected regions.

In gomphiasis the osseous tissue is involved and it is absolutely imperative that the teeth in their bony sockets be firmly registered in that we give immobility or rest, as the factor in bringing about normal relations. In observing the maxims of surgery you proceed with agencies promissory of success. Remove the cause and give rest, and most cases of gomphiasis will yield without the intervention of medicinal aid. Gomphiasis it appears is largely the sequence of a disturbed digestive tract, and proper dieting will tend to correct the difficulty; though prosthetic appliances properly constructed are always a decided benefit.

Of what service can any medicine be if the teeth are left to yield to the force of mastication? How can nature restore the osseous tissue when there is a constant mobility of the injured region? The abuse which this movement of manducation and mastication contributes offsets any attempt within the gift of nature, and consequently the condition instead of improving tends rather to the worse. If it were but the muscular tissue that was affected, mobility would not necessarily interfere with its healing tendency, but being the osseous tissue the teeth must be fastened in such a manner most congenial and in positions occupied when mastication is being performed — if this latter element is not regarded, little success can be attended or anticipated. The all important question at this point is, how can we safely guarantee that when the teeth are splinted or knuckled that their positions will be precisely as they are during mastication? I have found that the task is not so difficult. By requiring the patient to close the teeth together in a manner assuring accurate occlusion, I then prepare a roll of modelling compound about the length and diameter of a lead pencil, and

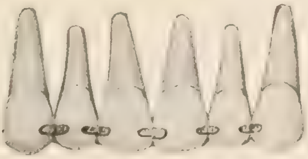

Diagram IV.
Gold Braces.

while it is still in a most moldable condition, distend the lips and cheeks of the patient, and lay the roll of compound in the vestibule of the mouth and hastily fashion the compound against and about the buccal and labial surfaces of the inferior teeth (the inferior teeth being usually the ones affected—though, if the superior denture is the one giving trouble I proceed as with the former). I next have a syringe of cold water and dash the water on the compound, thus quickly cooling the compound. Then request the patient to release the position of occlusion, and next proceed to lay a similar roll of compound around the lingual surfaces of the teeth, being especially careful not to cover the occlusal surfaces nor incisal edges. With this carefully performed you have accurately registered the position of those teeth as they stand during mastication, and under no strain other than the contact of occlusion If this is observed you are now ready to take a plaster impression of the occlusal surfaces and incisal edges of the registered teeth. And a splint or attachment which is constructed in this painstaking manner is certain to be efficient in rendering service. A die is made from the plaster model and the molar and bicuspid cusps are swaged either in one piece (gold about 32 gauge) or you can swage each cusp separately and reposition them in the mouth and take an impression as they are in position (the teeth still registered) and then solder these individual cusps into an assemblage of cusps. Though the former method will be found perfect enough. After the cusps are swaged and trimmed I solder a bent bar of gold to ride on the lingual surfaces of the incisors and solder this to the mesial edge of the first bicuspid gold cusps, (Diagram III.) Then polish the case and carefully bring the gold attachment into place It may need a trifle changing before cementing into position, if so be sure to see that you are not pressing unduely on any one of the teeth since it is essential that they all bear the burden alike; then cement the case into place and dismiss the patient for a day or two and upon returning clamp the anterior teeth to the gold bar by means of gold wire or the finest harpscord, and the mechanical side of the case is complete. Having carefully fumigated the gingivæ with sulphur I give the gums a bath with extract of geranium; the former gives assurance of antiseptic treatment while the latter constricts the muscular tissue surrounding the teeth inducing the gums to tightly hug the cervical portion of the dental organs.

The case can also be constructed by placing gold bands about the affected teeth, cementing them into place and leaving them thus for a period of at least six months—though following up occasionally with the medication as above directed.

There is another very serviceable method, and that is to so construct the attachment that the mesial and distal surfaces are embraced by gold of a crescent shape, though the two crescents must be soldered so as to leave the ends of the crescents to embrace the neighboring tooth. In the event this dual crescent is used on molars you may solder a small lug or spur on the attachment so as to prevent the crescent from being forced, during mastication, against the gums. These lugs or supports rest on the distal and mesial fifth of the occlusal surfaces. This device is very simple and can be applied in many cases, since in most of the cases of gomphiasis the teeth are slightly separated, hence necessitating the trimming of the approximating surfaces. But if trimming the teeth is required in order to save the case, trim even though considerable tooth structure is destroyed. (Diagram IV.)

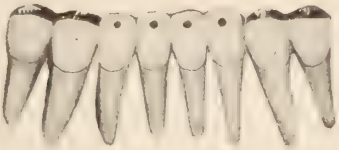

DIAGRAM V.
Gold Cusps, Bar and Pin.

Should the anterior teeth be the seat of trouble a splendid method consists in making a cope of gold for the cuspids and connecting these two gold cusps by means of a golden bar fashioned in a way as to ride just about five millimeters below the incisal edge of the incisors, then drill a small hole through the incisal tip and arrange to have a gold pin pass through this opening soldered onto the gold bar, then on the free end of the pin a thread can be cut and nut fitted; cement the case into position and add the *thin* nut to the pin. Dismiss the patient and in the course of a few days have him return and then trim off the exposed parts of the pin and with discs proceed to polish the thin nut down to mere feather edge and you will have a very strong and permanent attachment. (Diagram V.)

I have employed these methods with the best of success and am certain that if the procedures are noted few will meet with difficulty in handling these cases.

Pyorrhea alveolaris will yield after giving it similar consideration and I am sanguine that most of the teeth of this character are often over medicated and failure results in that the teeth do not receive sufficient rest. This paper intends to recommend the necessity of affording positive stability to the loose teeth; that surgical maxims must be observed and prosthetic appliances will afford the best possible means of accomplishing this result.

## A METHOD OF BANDING LOGAN CROWNS.

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Of all the crowns introduced into the dental profession, the Logan more nearly imitates the natural teeth. One of its advantages over most porcelain crowns is that the body, which is molded under high pressure, is baked around the post, making it a very strong crown. One disadvantage is, that oftentimes the crown which is best adapted to the case may be too small in diameter at the neck in one or both directions.

No doubt those who have had experience with that class of porcelain crowns which has new body baked on the surface of facings, have found the new portion of the crown liable to fracture. This is caused by the new body not being molded under pressure, hence it does not form a compact mass like the facing. In case of a close, excessive over-bite, it is almost impossible to add enough new porcelain to superior incisors and cuspids in certain places to give sufficient strength.

There are many methods of banding Logan crowns for the protection of frail roots. The usual methods of banding Logans with gold will not be mentioned, for every dentist has his particular method. An objection to some of these methods is that the crowns are lacking in esthetic effect. When the diameter of the neck of the crown is less than that of the root, and if an attempt is made to build this portion of the crown with gold, it usually leaves the shoulders, which give an inartistic and unesthetic appearance.

Many dentists prefer making a Richmond crown instead of a banded Logan. But there are many objections to the Richmond crown. It is more difficult to match the color of the natural teeth with a Richmond. If the crown is made without tipping the incisal edge, it is one of the weakest crowns made. In many cases a tip on the incisal edge causes the crown to be unsightly. It is almost impossible to construct a Richmond without the facing slightly changing color and the joints discoloring in the course of time.

The crown, which is to be described is a banded Logan with new porcelain baked in the space between the floor of the band and the crown. The technic of constructing an incisor or cuspid crown by this method is as follows: After the root has been prepared, as for a Richmond, and the pulp canal enlarged for the post, a platinum cap is fitted to the root and a hole drilled through the floor for the post of the crown. The crown is now fitted to the cap. It should be ground so that there is a fairly good joint on the labial surface. After the crown has been adjusted to proper alignment with the other teeth, and has normal articulation, it is removed from the cap and its post slightly warmed. A small amount of hard wax is placed around the post, and crown adjusted in position. After the wax has been thoroughly chilled, the crown and cap are removed in proper relation. (Fig. 1.) The surplus wax is removed and the crown and cap are invested in any of the high fusing investment materials. The wax is washed out and the post soldered to the cap. (It is advisable to solder in the furnace.)

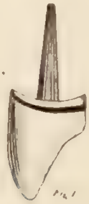
Fig 1

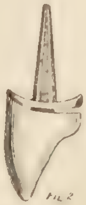
Fig 2

After the crown has been thoroughly cleansed it is ready for the new porcelain. (Fig. 2.) Either low or high-fusing body may be used to fill the joints. The body should be made into a thin paste and worked into the space between the floor of the cap and the crown until it is well filled. An excess should be placed around the joint to allow for shrinkage. After the porcelain has been fused all excess should be ground away and any defects should be filled and the crown rebaked. The finishing should be done with Arkansas stones and cuttle-fish disks.

This method gives a Logan a good joint that harmonizes with the crown. It has all the advantages of an untipped Richmond without its disadvantages. It has advantages over an unbanded Logan in that the root is hermetically sealed, removing all possible chance for future decay. There is no danger of the root splitting. If the diameter of the neck of the crown should be less than that of the root it may be increased by adding a sufficient amount of body to that portion of the crown. Or if the crown should be too short it may be lengthened by leaving a longer space between the floor of the band and the crown and filling in with body. One place in particular where this crown may be used to good advantage is in a mouth where the teeth are quite irregular, making it almost impossible to obtain a perfect joint with an unbanded Logan. If this method of banding a Logan is used all that is necessary is to get the crown in proper relation to the other teeth, and a good joint can be made in all cases.

# CAVITY STERILIZATION.

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It is the purpose of this paper, not to take a dogmatic stand, but to express briefly a method of cavity sterilization which has been practiced by the writer for the past ten years with most gratifying results.

No doubt the readers of this article are familiar with dental histology, and likewise have a knowledge of the habits of bacteria. It is hoped, however, that they will be patient while these subjects are touched upon.

A microscopic examination of a longitudinal section of a tooth discloses fine tubular processes known as "dentinal tubules," extending through the dentine radially from the pulp. Contained within these tubules are protoplasmic processes (Tomes fibres), which are continuations of the odontoblastic layer of the pulp. The tubules and fibres alike have their greatest diameters nearest the pulp, and decrease in size gradually toward the periphery of the dentine. This point is of clinical importance, as in deep carious cavities dental pulps are not infrequently infected by the products of bacteria and even invaded by bacteria themselves passing through the widened mouths of the tubules. Tomes fibers are not nerve filaments; at least, in the light of present knowledge they are not claimed to be such, although they are the media through which sensation is carried to the pulp.

Dr. Miller, after having conducted a series of experiments, decided that dental caries was due to the result of lactic fermentation, the lactic acid thus formed having a decalcifying action upon the dental tissues. Bacteria next attack the decalcified parts and exert their destructive influence upon the organic structure of the teeth. Let it be well understood that decalcification must precede bacterial invasion, as bacteria are never found to invade the dental tissue beyond the depth of decalcification. As stated before, bacteria and their products may invade the pulp through the widened mouth of the tubules, when decalcification has approached the pulp so closely that but a thin layer of normal dentine is left as a septum.

In the event of bacteria gaining access to the pulp, inflammatory action is sure to follow. Leucocytes attack the germs and inflammatory effusions are poured into the intercellular spaces. The pulp, having no lymphatic system, cannot relieve itself of the effusions, and degeneration, of necessity, takes place within the pulp chamber. The pulp in this condition is said to be crippled, and sooner or later must go the voyage to meet face to face with the dear ones that have gone before.

With these untoward effects of the presence of bacteria and their products, in cavities of decay ever occurring, it behooves us to take steps to destroy those authors of sleepless nights, and protect the dental pulp from their influence.

Having considered briefly the histology of the dentine, and the means by which bacteria and their products gain access to the dental pulp, let us turn our attention to a method, the employment of which will insure success in our efforts toward tooth salvation.

Wherever it is possible, the tooth to be treated should be isolated with rubber dam; this is a cardinal point in the treatment of all cavities of dental decay. This done, all surfaces of the tooth should be thoroughly cleansed mechanically, and then bathed in alcohol (as near absolute as it is possible to preserve it). Alcohol, having so great an affinity for water, absorbs minute quantities of moisture when exposed to the atmosphere. The cavity of decay should now be drenched with this same fluid and excavation begun. If it be found that the cavity is superficial in character, and that all decalcified dentine can be successfully removed, the possibilities of bacterial infection are not to be feared, and the tooth may be again washed with alcohol, thoroughly dried and filled. On the other hand, if the decalcifying process has extended so far toward the pulp that its removal would endanger that organ, an entirely different problem confronts the operator. He must now determine whether or not the pulp has been infected. If his diagnosis reveals a normal organ, he may proceed in the following manner to prepare and sterilize the cavity:

Enamel margins are first prepared in the usual way until free access to the cavity has been obtained. With spoon-shaped excavators, the softer portion of carious dentine is now removed and the tooth drenched with alcohol. A current of warm air should be directed into the cavity until the remaining dentine has been well dried out. With keen-edged excavators, the pulp is carefully approached until that portion of the dentine which is actually carious has been removed. A line of differentiation must be drawn between true caries and simply decalcified dentine. This is difficult, even impossible, without the aid of a microscope. We must, therefore, depend upon the general appearance of the dentine, and its resistance to the cutting power of the excavators. Having removed as much of the dentine as his better judgment dictates, it remains for the operator to thoroughly sterilize that portion of decalcified dentine overlying the pulp. The use of alcohol from time to time during the operation has occasioned desiccation of the dentine, and the antiseptic to be used will, by capillary attraction, be drawn into the dentinal tubules.

The Ceylon oil of cinnamon is no doubt the best antiseptic under the circumstances, as its lasting qualities are very great. It has, however, some unpleasant features which the writer will endeavor to eliminate in the following:

A pledget of cotton fully as large as the cavity, saturated with Ceylon oil of cinnamon may be placed in the cavity and a current of very hot air projected upon it until the patient exhibits signs of discomfort. The hot air increases the fluidity of the oil, which will be readily absorbed by the dentinal tubules. The heat also increases the germicidal power of the oil. The pledget of cotton when removed from the tooth, will disclose some discoloration of the dentine occasioned by the cinnamon. The cavity should be immediately bathed with eucalyptol (the active principle of eucalyptus). This should be dried out with pledgets of cotton and the bathing repeated several times until the discoloration has disappeared. A current of warm air is now employed to dry the cavity, and that portion of the dentine overlying the pulp, coated with amber varnish. When the volatile menstruum of the varnish has been driven off by a current of air, the floor of the cavity may be covered with a generous layer of cement (oxyphosphate of zinc preferred), and the balance of the cavity filled with temporary stopping, as a safeguard against the pressure of the insertion of a permanent filling over newly-mixed cement. If the tooth gives satisfactory evidence or normality of the pulp, it may in a week or ten days be permanently filled.

The question may be asked: "Does the layer of decalcified dentine over the pulp ever become recalcified?" It does not. It is simply a perfect pulp-capping of mummified tissue.

What becomes of the toxines produced by the bacteria associated with caries? They remain immersed in the oil in the dentinal tubules, or they have been rendered volatile by the use of alcohol in the cavity, and thus eliminated.

Suffice it to say, that in the experience of the writer, they have on but rare occasions made themselves manifest in the pulp, and it is just possible that the pulp was invaded by them prior to the operation of cavity sterilization. In other words, infection only occurs when the diagnosis as to the normal state of the pulp, is faulty. In all cases where pulp-disorder did follow, it appeared within twenty-four hours after the operation.

One word more. Thoroughness of detail, good judgment, and the element of haste entirely eliminated, make this method a success, decrease the sale of arsenic and vapocaine, and render the soul-harrowing failures of root-canal fillings, less frequent.

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# TREATMENT OF PYORRHEA ALVEOLARIS.

### BY DR. T. C. REID, PRAIRIE DEPOT, OHIO.

I have found the following treatment in chronic cases of pyorrhea alveolaris to be the most satisfactory of any that I have used:

First, I wash the pockets thoroughly with sterilized hot water, and dry them as well as possible. I then inject a four per cent. solution of cocaine (it is unnecessary to use a stronger solution), and remove all deposits from the teeth and roots. Next treat the pockets with chemically pure lactic acid. After drying the gums I then pack into the pockets a salve made of lanolin, iodol and bismuth. The idea in packing the pockets is to keep out the saliva as much as possible and to encourage healing from the bottom of the pockets. In connection with this treatment I also instruct the patient to massage the gums frequently, this being continued during the treatment and for at least a month or so afterwards, using the following: Lanolin, one ounce; boracic acid, forty grains; with a few drops of some essential oil.

Any tendency to bleeding will cease in a few days.

It has been my experience that this method, if used in every detail, will give extremely satisfactory results in the treatment of this dreaded and persistent disease.

# CROWN AND BRIDGE-WORK.*

### BY DR. H. E. JENKINS, IRONTON, OHIO.

To become proficient in this branch of dentistry it is necessary that the operator have an artistic eye, and a good perception of form, size and color. He must be of a mechanical turn of mind and be able to reproduce what he sees.

I will not atempt to show you anything new even though I show you something that every one does not produce. I have no one man's fixed ideas, but my plan has been to select the most suitable from all sources, adapting it to my needs.

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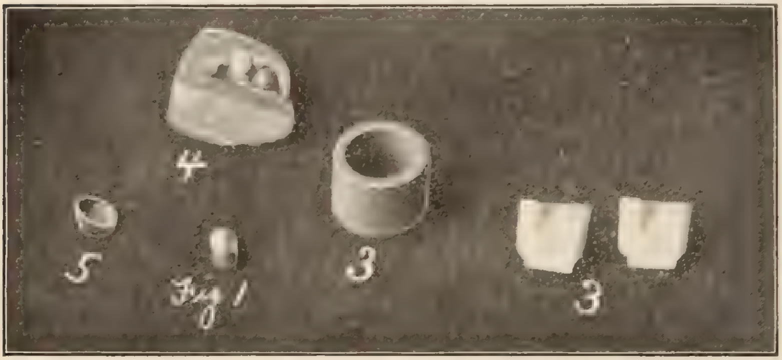
*Demonstrated before the Ohio State Dental Society, December, 1902.

I do not mean to say that the method chosen is the only good one or that I have brought out all the good points, but rather that it stands as a means I have thoroughly tried and one that can be relied upon.

## GOLD CROWN.

The unsightly appearance of a gold crown makes it desirable for the back of the mouth, and the farther back the better. I prefer a seamless crown, made by carving my tooth in bees wax. A plaster cast of the adjoining and opposing teeth is absolutely necessary in order to get a perfect articulation, size, and contour; then I embed my wax model in asbestos and plaster in halves, separate, take out wax; place halves together, heat them and pour full of type metal which gives me a tooth the exact duplicate of the one I had in wax. (See Fig. 1.) I set this on a base (Fig 2), then put a metal ring over it, pour full of any of the low fusible metals, separate and put in your seamless cap which has been drawn to the size of the circumference of the neck of metal tooth; place back in ring (Fig. 3), fill with very fine shot and swage until you have formed your crown. Now you have a crown that has a perfect articulation, no matter how irregular, and one that is contoured on the proximal surface; thus preventing any wedging of food, which is a very common trouble with crowns. (Fig. 4.)

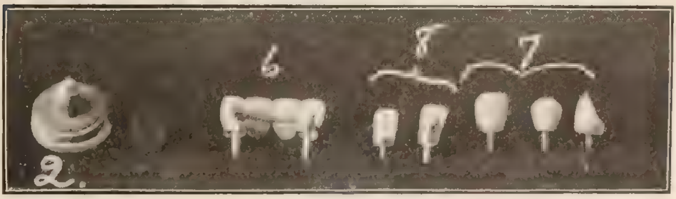


I use 23k gold and always reinforce the cusps with 18 or 20k solder of my own make, which is higher fusing than the commercial, there being no zinc in it.

I make it an invariable rule not to put a crown on a live tooth, for in such a case I find my method of trimming causes the patient excruciating pain, as I trim the tooth so my crown will not be any larger than the natural one. As a rule I find this method kills them, so have abandoned it and prefer devitalizing and filling root, cutting off the tooth to the gum line where I can trim to suit. You will doubtless think this a long and tedious way to make a crown, but after having made several of them you will find that it takes no more time than making a band and soldering on the cap. The above method requires about one hour and a quarter and most of this time is wasted in waiting for plaster to harden at the start.

All bridges back of the first bicuspid I prefer to make entirely of gold. I make my dummies by the same method as for crowns; reinforce them with solder, cutting off the inner portion to angle desired, cover with plate of gold and solder, which makes my dummies hollow and I find them sufficiently strong. (Fig. 5.)

For the front of the mouth I prefer porcelain, either facings or carved. I find the former the most satisfactory for bridges. If the occlusion is close I use a gold backing, if not, porcelain, which is strengthened by a square bar of heavy irido-platinum extending from one abutment to the other, to which my pins are soldered with a 25 per cent platinum solder. (Fig. 6.)



## CARVED PORCELAIN CROWNS.

Any one who has tried it will agree with me that it requires patience and perseverance to master the art of making carved porcelain crowns.

When properly made it is the nearest approach to nature of any, from a hygienic and artistic standpoint

The post and band are the same as for a Richmond crown, except I use platinum and let post extend into body of crown to which the porcelain attaches itself, thereby giving strength. I use the high fusing bodies. (Brewster's.)

When carving the tooth it is essential for the operator to have artistic tendencies and be able to model, otherwise the beauty of the carved crown is lost. It takes an eye for color as well as some experience to learn to color properly. (Fig. 7 showing full, half, and without band.)

I also use facings in this kind of work and back with porcelain. (Fig. 8.)

I use an electric oven and depend on my eye as a guide rather than time in baking. Remember you must allow for shrinkage about 1-6. The porcelain will fuse to your band and the post that runs through your cap gives strength to your crown and makes a water-tight joint that will not discolor as does a Richmond crown.

They can be made in any odd shape, and are practically indestructible, match the natural teeth, and are to me the most satisfactory crowns I make.

It required a great amount of experimenting before I could make a satisfactory crown, but I consider the time well spent. The work was interesting and has proven profitable.

# "ANGLE'S METHOD OF MAKING PLASTER IMPRESSIONS AND MODELS IN ORTHODONTIA."*

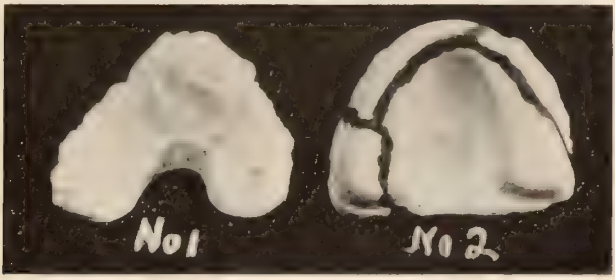
BY F. M. CASTO, M. D., D. D. S., COLUMBUS, O.

The following is a description of Dr. Angle's methods of plaster of Paris impressions and models:

1. Select a tray the proper size, those best suited for this work are the ones designed by Dr. Angle, the rims and vaults being much higher than the ordinary trays. The rim is turned over the posterior part so as to fit over the tuberosity of the upper jaw and limits also the flow of plaster at these points.

2. Mix the plaster by sifting into water until no more will be taken up—don't stir—allow it to settle and pour off excess water. French's impression plaster serves best. Nothing to hasten its setting is needed.

3. Place a greater amount of the plaster in the anterior part of tray allowing it to extend over on handle and posteriorly over the outer edge of the rim, being careful not to have it over the palatal portion, or vault of the tray. Fig. 1.



4. Place the tray squarely in position in the mouth, instruct patient to bite on it until the occlusal edges of the teeth are embedded. While it is being held in position by this means, raise the lip and force the excess plaster on handle well up underneath the lip with the finger. This expels the air as well as insures a high impression. The tray is then forced home,

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*Demonstrated at Ohio State Dental Society, December, 1902.

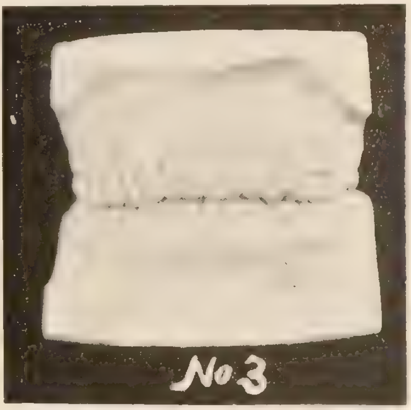
or until the occlusal surfaces of the teeth almost touch the bottom of it.

5. After the plaster has set moderately hard, remove all superfluous pieces from around the outside of the tray. The tray should next be removed (but not until the plaster is set sufficiently hard for its removal, because of the liability of the patient biting upon the posterior part of the impression and fracturing it). Removal is best accomplished by pressing tightly against the palatal portion with the second finger at the same time forcing the handle of the tray down, thus giving a rotary motion. If the inside of the tray has been kept polished it will come away without difficulty. A sharp groove is then cut over the region of one cuspid and parallel to it, if alignment of anterior teeth is more or less normal, or over both cuspids if considerable malocclusion exists, beginning at uppermost part, because the plaster is always thickest at these points and carrying it to occlusal surface of impression, being careful not to cut quite through. With a quick pry the anterior plate is loosened and removed. With the thumb and finger the sides are likewise loosened and removed. The palatal portion is then worked loose and forced out posteriorly. The pieces should then be laid away on a blotting paper and permitted to thoroughly dry out before attempting to unite, as there is much less danger of fracturing the frail margins and the small pieces, if any, may be more securely fastened in place. In most cases the impression will come away in four pieces, but if many more it does not render it useless.

6. Adjust all the small pieces to the larger ones: celluloid dissolved in ether and alcohol will securely fasten them. Next adapt the larger ones, being careful to bring the surfaces together as few times as possible as there is great danger of dislodging or breaking off the frail margins. These may be attached by means of sticky wax, by heating the end of the pencil and drawing it over the united parts or by heating bees wax on a spatula and flowing over the fracture. If the operation has been properly performed the impression will present the appearance as illustrated in Fig. 2.

The same general principles apply to the taking of a lower impression, the difference being that the plaster is distributed more especially over the lingual sides of the tray, the cheeks are drawn out and the patient instructed to lift the tongue before forcing the tray home. The large piece of plaster on the lingual side of the anterior teeth should be preserved and used in putting the impression together, as it serves for a guide to prevent a widening or narrowing of the heels of the impression.

7. Flood the impression with thin shellac varnish, permit this to become thoroughly hard, then coat it again with shellac varnish somewhat thicker or about the usual consistency used for ordinary plaster impressions. Apply over all the surface except the gum surface in front; this part is omitted so as not to obliterate the fine "stipples." Next apply an even coat of sandarac varnish avoiding as before the surface in front.



8. In pouring up the model, air bubbles are best avoided by painting thin plaster over the impression with a camel's hair brush, after which the plaster can be rapidly introduced with a spatula, gently shaking to place. Build the plaster rather high on the impression so as to allow for future shaping, and invert upon a glass slab.

9. In separating the model, the impression is first trimmed away until the occlusal surfaces of the teeth are in sight. A sharp groove is then cut parallel to this surface and

about the gingival margin of the teeth, from heel to heel on the buccal side. Short grooves are then cut at right angles to this and about half an inch apart. These small blocks are removed until the buccal and labial surfaces are free. The palatal portion is then removed by forcing it posteriorly. If carefully done the model will be liberated without injury.

10. Trim the models as illustrated in Fig. 3

# CONTINUOUS GUM DENTURES.

### BY L. P. HASKELL, CHICAGO.

As the article in THE SUMMARY for January on "Continuous Gum," makes a misstatement in regard to my ideas, I wish to correct it, and will also add some suggestions.

The writer says "Dr. L. P. Haskell advises a thick plate 24 to 27 gauge;" my universal statement has been 28 gauge. Further: "for he believes the strength rests largely in the plate, while others advocate a thin plate, believing the strength rests largely in the porcelain."

Yes. I do most emphatically believe the strength rests largely in the plate, and this after fifty-one years' continuous experience in this kind of work, having tried thinner plates for a year to my sorrow.

A thin veneer of porcelain will not stand the strain across the palate in masticating in very many cases. The thin plate also is very liable to change shape in baking, while the 28 gauge I find *never* does, and I use no support whatever, not even a plaster and asbestos base, and handling the case with the long pliers, independently of the slide on which it is baked.

It is not at all necessary to cool off in the oven, but transfer at once to a cold cooling-muffle. The case is so hot it heats the muffle sufficiently so they cool together and the case is sufficiently annealed and no danger of checks, at least that is my constant experience.

In this work there is no need of platinum solder, as I give the case sufficient heat for the platinum to absorb, not "vaporize" the gold, so when ready for the porcelain there is no trace of gold. The gold should be rolled very thin and placed under the pins and under the foot-piece of the backings, no borax being needed nor "soldering-iron." Apply the backing on three pieces, much easier than two.

The first application of body should be as full as if there were to be no shrinkage, applying quite wet at first between and around the necks of teeth, so as to fill all crevices, jarring the plate with the spatula and applying the cloth to absorb excess of moisture. Then absorb with the cloth the excess of moisture in the dish, apply it just as it can be handled most readily, pressing hard, jarring and absorbing several times. Partially drying over the burner, trim around and between the necks of the teeth with a *quill tooth-pick*, which is far preferable to a steel instrument. Finally draw around the necks of the teeth a small brush, wetting each time to give a final finish, being sure there are no specks left between the teeth on the sides. Finish the application on the outside before applying to the palatal surface.

Do not finish the necks of bicuspids and molars with the enamel up to the square shoulder, as in rubber, but with the body contour to the natural shape of the lingual neck. Also shape the lingual surface of cuspids like nature, convex not concave.

It is far safer to use corundum rather than carborundum in grinding the porcelain when needed.

## THE RADICAL PREPARATION OF CAVITIES.*

BY HARRY M. SEMANS, D. D. S., COLUMBUS, OHIO.

To-day we hear a battle-cry in the warfare we are waging against our mutual enemy, "the destroyer of teeth," that sounds ominous to the latter's welfare. No doubt every one of us opened our campaign with the determination to do or die; our plans well laid, following the precepts of others augmented by our own ideas of how the fight should be carried on. But the battle soon changes its aspect; our enthusiasm has passed the ebullition stage, and we settle down to a warfare in which success fluctuates, first to us, then to the enemy. A little skirmish here, heavy fighting there and the ground seems clear of the foe; that part of the field we think is ours. When, like thunder out of a clear sky, the fell destroyer dashes on the field, and at it we go again, chagrined somewhat, also our enthusiasm very much dampened, but with dogged determination nevertheless to make good and retrieve our lost vantage. So conquerors again are we, or perhaps we retire after a drawn battle, but woe to us if we retire defeated. Our patients represent our field of strife; each individual a skirmish or a battle; disappointing results, and unavoidable conditions producing recurrence of decay, etc., bring about our return engagements of warfare.

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*Read before Ohio State Dental Society, December, 1902.

Other battle-cries have sounded forth, their echoes still reverberating about us. What a stir in the world of dentistry the cry "New Departure," caused, with its motto, "Truth, without fear and without favor." The echoes still faintly sound on the listening ear. But now a new one sounds loud and clear. Hope fills the breast of many, "No more heart-breaking return battles," they cry, and with expanded lungs and glad hearts they shout the new refrain. Others listen, half doubting; then stumbling, half blind, rush after. Others again receive it with distrust, fearful lest it may carry them into dangerous places. Some say "It's nothing new, the refrain possibly, that's all."

Thus the new battle cry, "Extension for prevention," is being received. "Radical of the Radical," one doubter says. Another adds, "I'm not an extremist, I use my best judgment combined with all my skill for each individual case. Radicalism is not my style." Then an extreme advocate of extension for prevention enters the discussion. "If your best judgment is good judgment, and I have no doubt it is, then you are a radical, for radicalism is but the uprooting of all that is false." "No, that's where you err," our doubting friend puts in, "I am conservative to the extent that I do not allow my judgment to be warped by enthusiasm. I am liberal in that I may enjoy extreme measures if my judgment says so. And you are radical if you bring every case under your extension for prevention theory. Radicalism is my servant, you are its slave."

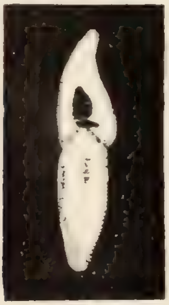
"But," adds our enthusiastic friend, "It is not in your power to judge as to the possibility of recurrence of decay. If you desire ultimate success you must preclude the possibility of future trouble."

"Oh, well," says Dr. Conservative, "if that is so, lets put it this way: I prepare a simple proximal cavity in an upper central incisor. I cut to the good, clean, strong walls and prepare to fill. But wait, some say I must cleave away beyond the field of possible future trouble. The tooth is strong now, the general conditions of the mouth are good, but all things are possible in this world, so to the line of safety I go. Again I prepare to fill. But still all things are possible, and the pulp this time is brought within the range of possibility So out it comes. The third time I prepare to fill. Hold again, sometimes periosteal troubles arise after pulp extermination; how can I tell; better extract and bridge in. And now what direful results we sometimes see and hear about from bridge anchorage. Better remove all the teeth and insert a complete set of artificial teeth. There. I stayed within the range of possibility."

So the discussion goes on, interesting to us. certainly confusing at times, reaching to a point of absurdity if carried as above, all for our ultimate good, no doubt. Like our doubting conservative friend just mentioned, the word "radical" to a great many is a bugaboo. If we are a little uncertain as to what a certain individual is advocating, we call him radical. If we even secretly believe, but fear to openly follow, it is radical. If we think a remedy is needed but the means heroic, it's radical. If we have arrived at the point of impatience and feel that we must do something final, it is radical means. To be radical is often held to be less than level headed, such a one is said to be carried away by enthusiasm regardless of consequences. We often hear and receive advice of this kind: "Always be conservative, don't rush headlong into things." The advice implies, "don't be radical."

To-day a number of earnest thinkers in our profession, men who control this earnest thought by their long experience in practical results, are advocating what to many seems extreme. Their desire is to do now, the very best that can be done for their patients. They strive to prevent a recurrence of trouble in the future, instead of merely putting to a stop present trouble. Their desire is more than to ream out and fill a certain particular hole; it is to clear away that particular space so as to prevent the likelihood of having it to do again.

They desire to place a filling so that its future will be insured both from its own strength and from the soundness and stability of its neighbors. And to do this they find that something more than good workmanship is necessary. For they have found that good workmanship will often fail. So this constant striving for better results is producing ways and means that seem to many beyond the point of practical everyday necessity.



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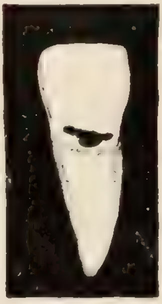


NO. 2

We find their purpose two-fold. First, there is the desire to extend beyond the possible chance of future decay. Second, there is the desire to extend beyond the possibility of a weak filling because of uncertain retention. Many proximal fillings are found to decay at the gingival border and its angles (Fig. 1), and occasionally at the incisive end. To many comes the thought, "that's because of poor work." Yet there is absolutely no doubt but that many good fillings fail there. That is, by good fillings I mean those inserted with good walls. Now we all know that micro-organisms of the decaying food causes caries of the teeth, and we also know that decaying food lodges at the gingival borders of most teeth. A well-inserted filling can by no possible means prevent caries occurring beyond its own field of occupation. V-shaped spaces have been attempted with little or no results, often bad results. So we are to-day brought face to face with a radical method. Which only is this—get beyond the field of possible decay in cavity preparation. Why should we fear the word radical? It means thoroughness and not reckless enthusiasm as Dr. Conservative contended.

Take a proximal cavity in a superior incisor. A consistent extension for prevention advocate cuts beyond the food collecting space and passes under the gum festoon, he begins his gingival angles out to the point where decaying food cannot lodge. Also the labial and palatal walls may be extended. What is the limit of such preparation? That must be decided by his good judgment. The question is then brought up as to the necessity for such radical treatment, if the field presents no likelihood of future decay. The advocates of extension insist that there is always a chance, even in the very best of conditions. Another common field for extension is found at the gingival border of buccal and labial surfaces, where erosion plays its fatal game; and where we often find that white crumbling appearance of the enamel. It extends at times clear to the proximal angles and under the gum the entire length. (Fig. 2.) When we find the way to stop the ravages of erosion, we then insure our fillings. It is an every-day occurrence to find bad conditions under many fillings on the proximal surfaces of bicuspids and molars. (Figs. 3 and 4.) The number found is measured by extent of practice and time. If the good judgment and skill of the persons who inserted such fillings had been augmented by foresight much trouble would have been averted. It seems to me, if we are conscientious in our desire to do what is proper, and yet not resort to extreme treatment in any case, then we must fall back on clairvoyancy; for our ordinary minds cannot tell the future.

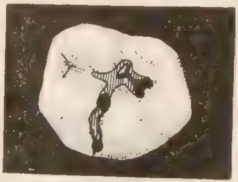
No 3

No. 4

Take another class of radicalism. Those who advocate extension for prevention of breaking and splitting away of structure too friable to bear the constant strain; weakened by undercutting and poorly placed retention points. Take a proximal cavity on any of the bicuspids or molars. How often we find those fillings dropping out. The preparation of a step cavity well placed on the occlusal surface puts an end to that trouble. There is no doubt but that all of us dislike to have our professional contemporaries see our unfortunate results and have a chance to shake their heads, talk under their breaths in full view of the patient, then with great magnanimity say aloud: "Even the best of us will sometimes have bad results." I will tell you how to get even—treat every case radically and shake your head over all of their conservative efforts that turn out badly.

Most of us remember the step cavity so well illustrated by Dr. Ruggles before our meeting a few years ago. That was a radical treatment feared by many, and we yet hear men say they resort to it as the last means. It seems to me they should say they will resort to it if it will cause an avoidance of future trouble. I don't believe any of us to-day, if we have any doubt as to whether a proximal cavity, involving the cutting edge, will remain good, but what will prepare that cavity with a good retaining step. And so it is in many other cases.

We follow out deep fissures and extend them (Fig. 5) if we have any doubt as to the future. Two motives then actuate us. One is that our results may remain good before the eyes of the world and the other is that the welfare of the patient should be looked after. The latter, however, often weighs less than the former. The supposition is that we are all ethical; then why should we hesitate to resort to extreme measures if they are for our own and the patient's good? Is it because of lack of time? Then we slight the work and are not ethical. It surely cannot be because of unskillfulness or laziness, for if that is so, we missed our calling. We are then like the farm-hand who entered the ministry because he thought he saw the letter "P" in the sky and interpreted it as meaning that he should preach. The presiding elder before very long informed him that instead of preach it meant plow. I wonder if it is because we fear making a bad impression on our patients? There is no doubt at all but that a certain class of patients, and their number is by no means small, are easily impressed with the idea that we are doing them at every turn. The straight-out statement that there is but one possible way with no side arguments, convinces better than anything else. Many of us dread giving impressions of high price. I fear we are lowering our standard very much when we allow that to hinder us in our work. We haven't reached that Utopian age yet in which our motives are construed to be for our neighbor's welfare. We are now decidedly living in an age of personal commercialism, and our patients are inclined to judge us from their own standard, so if we wish to do our work for the best results, we must impress our patients not only with our skillfulness, but our honesty and integrity.



No. 5

They know after all but very little of our ways and means for accomplishing results, but they do soon learn certain characteristics we possess, which sooner or later make or unmake us. They have little or no idea concerning radical preparation of cavities, but they do notice the permanency of fillings They may fear we are doing more and demanding more than we should, if so then we are mostly to blame, especially if we have had time to become known to them.

The question is simply this: Where should radical preparation be employed, and when?

First, then, radical preparation should be done wherever decaying food may find enlodgment, and wherever doubtful retention points are in evidence. To the second question, I might say that will always depend upon our own individual surroundings and inclination. There is every reason in the world to believe that a filling covering the entire field of possible decay will last longer and do better than one situated in the middle of that same field; and retention places built into solid tooth structure will insure the stability of a filling better than undercutting in thin or friable walls. When the Spanish bullfighter takes the bull by the horns, does he stab him to the heart or does he strike him a blow between the eyes and run? Perhaps in the latter case he can reach the fence, and perhaps not. In our dilemma, heroic treatment takes our breath away, so we resort to a blow that will hold in check for a while, and trust to our good luck in getting away.

Perhaps some of us are like Dr. Conservative and expect to rely on our good judgment as to the necessity for radical treatment in this often-mentioned field of possible future troubles. Even then it is similar to holding the same bull by the horns, we know his temper to be very amiable just now, so we let go and sedately walk to the fence. However, no bull ever lived but that he reserved the privilege of showing uncontrolable hatred to all the world whenever he felt like it. Yet we do hate terribly to kill the bull every time.

I acknowledge my illustration to be homely, yet I believe it fits the case very well. Even though we admit the arguments, yet we dread shaping the conclusion of every case to these arguments. So we solace ourselves by saying: "Radical preparation was not necessary in that case." Perhaps not, but that nice amiable bull may see red some day. And those clean, white and strong walls may show caries some day. The pioneer American dentists were radical · the men of forty years ago were radical whenever they departed from the beaten paths of those pioneers. Radicalism is rampant in our profession today. And in looking back one hundred years we fail to find a time when it was not in evidence. Radicalism is death to slovenliness, thoughtlessness, carelessness and dishonesty. The dentist who heeds its precepts turns his profession into an art. The man who avoids it altogether does his work as a job-lot.

According to "Webster," "A conservative is one who desires to maintain existing customs and ways, and is opposed to revolutionary or radical means. Radicalism refers to the uprooting of all falsehoods, abuses and wrongfully fixed habits."

# MEDICATED GUTTA-PERCHA AS A PERMANENT AND ANTISEPTIC ROOT-CANAL FILLING.*

BY L. T. CANFIELD, D. D. S., TOLEDO, OHIO.

Permanent and antiseptic root-canal filling does not seem to have concerned the profession very much, for there has been but little written on the subject. But it has concerned me to the extent that, for the past three years, I have been experimenting in the laboratory with the incubator, test tubes, and in teeth in the mouth.

There have been many methods and remedies recommended for the treatment and final filling of putrescent root-canals, or pulpless teeth. In fact for half a century this subject has claimed the attention of dentists. It was about fifty years ago that it was first considered feasible to restore by therapeutic treatment and filling, a tooth which had lost its pulp As near as I can learn, the pioneers in this treatment were Dr. John Rich and Dr. Townsend, of New York. They were soon followed by Atkinson, Flagg, Truman and Price.

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*Presented at Ohio State Dental Society, December, 1902.

Largely the same treatment is followed to-day. We all will admit that our success remains somewhat with the use, of the teachings of these same pioneers, viz.: First. free access to the infected part; secondly, cleanliness; that is, the free removal of the decomposed material and the thorough irrigation of the canals. To-day these two are recognized as the necessary preliminary steps. It is upon the remedies to be used as antiseptics and germicides, and the material best adapted for filling, that there has been much diversity of opinion. Too much praise cannot be given Dr. Callahan for the introduction about ten years ago, of his sulphuric acid treatment of root-canals.

Recognizing the difficulty attending the complete removal of organic tissues from roots, and the decided liability to sudden septic changes involved in their retention, almost every known antiseptic has been introduced into pulpless teeth. One of the first remedies claimed to possess the necessary properties for the successful treatment of such teeth, was a saturated solution of iodine in creosote, then followed carbolic acid, chloride of zinc, bichloride of mercury, nitrate of silver, the essential oils, mummifying pastes, etc. Some have been found all right by their advocates and some have not. Twenty-five years ago I was taught to fill pulpless teeth with gold. I did the best I could, but realize my many failures. I have followed along through these many years, the treatment and methods of my superiors and think I have met with the average success. But for several years it has been evident to me that there was an open field for a permanent and thoroughly antiseptic filling for root-canals. It being my belief that the value of drugs cannot be dissociated from medicinal properties and that these properties are not only determined by investigation, through experiments in laboratories, but of greater importance through the experience of the every-day and careful practitioner.

Of all the materials which have been employed at one time or another, the profession seems finally to have decided in favor of gutta-percha. But to be a perfect and ideal filling, it must contain properties to eliminate the predisposition to septic changes, after devitalization and present unsuitable soil for bacterial development.

It must be germicidal, pentrating, non-irritating, non-contracting and impermeable to everything that may be found free in the oral cavity. Perhaps some dentists only reason for putting anything into a pulpless tooth, is to keep the food out. This may be all right, but why fill a root at all if it be not to exclude that which makes filling a necessity—bacteria. The aim of the surgeon of to-day is, asepsis rather than antiseptics, avoiding infection rather than disinfecting.

After two years of experimenting I was convinced that gutta-percha, combined with wood creosote, formaldehyde, iodoform and oil of cassia made an antiseptic and ideal root-canal filling.

Every dentist knows the value of wood creosote for inflamed tissue. It is antiseptic, slightly anesthetic, penetrating and non-irritating. Iodoform, slightly anesthetic, penetrating, persistent, insoluble, antiseptic. It crystallizes on the walls of the canal chambers and remains continuously active. Formaldehyde is used for its remarkable drying and hardening power, together with its great antiseptic value. My next step was to so combine these germicides and antiseptics that they would not loose their medicinal properties and forever remain active, which was by no means an easy task. There are so many complicating conditions in the mouth, that the value of stoppings to resist the passage of bacteria must be tested in the laboratory. To do this the conditions must be as near as possible the same as exist in the mouth. It is unnecessary for me to give you a long list of tabulated experiments, showing bacterial growths in different root-canal stoppings, which I have collected, but I have used nearly every known method of root-canal filling, placed them in the incubator and found them infected. But the tubes filled with the medicated gutta-percha would show no infection or bacterial development. I have used the medicated points in pulpless teeth under all conditions and have never had acute inflammation.

After deciding on the germicides for medication, the next step was the thorough incorporation into every atom of the gutta-percha, so that the medicinal properties would not be lost but forever remain active. This was accomplished after nearly a year of experimentation by electricity and the gutta-percha formed into cone-shaped points of assorted lengths and sizes. The advantages of these medicated antiseptic points are very evident to the every-day practitioner. First, I sealed the tubules as well as the foramen, thus preventing infiltration of infective secretions into the dentine, making putrescence utterly impossible, leaving no fertile soil for bacterial development for the tooth cannot absorb and retain septic matter, thus preserving the color, as these germicides forever remain active, for every molecule of the filling is impregnated with these lasting germicides which do not loose their medicinal qualities as do all root-canal dressings by being absorbed.

I have filled with the medicated gutta-percha badly decayed and infected roots, in the mouth, for the express purpose of extraction for experiment, after six months of perfect immunity from trouble to the patient. I removed and placed in the incubator found no trace of bacterial development, then removed the filling from root, and made a chemical analysis, finding all the germicidal and medicinal qualities intact. These experiments have been carried on in different forms by me for the past three years, and I have the tables and data which I invite any and all to see at any time.

# COHESIVE TIN FOIL.*

BY DR. H. L. AMBLER, CLEVELAND, OHIO.

With this tin foil any dentist can begin at the base of any cavity in a tooth and build up the tin to the surface in one solid mass, so that if cut with an instrument it cuts the same as a piece of block tin. Or, you can take the filling and put it on an anvil and with light blows of a hammer forge it out in one piece. Those who have used the foil claim that it is more cohesive, more tenacious and makes a harder filling than any other similar tin foil.

*Demonstrated at Ohio State Dental Society, December, 1902.

# A VERY EASY METHOD OF STARTING COHESIVE GOLD FILLINGS.*

BY DR. D. E. SHEEHAN, HAMILTON, O.

A very easy method of starting cohesive foil fillings is a matter of vital importance to the dentist and also to the patient; as a time saver it is most interesting to the former and as a pain saver it is appreciated by the latter. To those dentists who have never had occasion to use soft foil is this clinic most interesting, and from close observation and inquiry I am assured that many dentists do not use it.

To that vast army of younger dentists who are each year graduated from colleges giving no instruction in the use of soft foil, my first advice would be that they immediately begin the use of it. Use it cautiously for it is fickle. Use it advisedly for it has limitation of usefulness, but use it frequently for it has virtue.

It may be used as a starter in pits, grooves or in cavities which are merely retentive in form, and because of its plasticity will go to its proper place more readily and more precisely than cohesive foil. In starting a filling a pellet of soft foil is placed in position and firmly driven into the pit or groove. The size of this pellet is governed entirely by conditions. If you start with a pit, only a small pellet is required. If with a groove, a larger pellet. If with the retentive form of the cavity, a large rope of gold made from one-third of a sheet of No. 4 is grasped with the foil carriers and rolled about the pliers between thumb and finger, the whole being pressed into place. Before condensing thoroughly in any case, a piece of cohesive foil is driven into the center of this first pellet, and the result is precisely the same as where a metal screw is desired in a stone wall. First a wooden peg is driven into a hole in the stone, then the screw is driven in the centre of the peg, the soft wood undergoing condensation that it may accommodate the screw, thereby making a powerful resistance.

In hypersensitive dentine when excavation is unbearable, the cavity need be made only retentive in form, then by placing a large pellet of soft foil in the cervical region and driving cohesive foil into its centre, the desired start is easily made. It is especially indicated in large approximo-occlusal cavities in bicuspids and molars, for by filling the cervical third with soft foil, the other two-thirds are easily finished with cohesive. Frequently the cervical third, which is so difficult to perfectly fill, is out of view, and to begin with cohesive foil would be a waste of time and energy, and end in possible failure. So frequently, too, do we find approximal cavities in lower bicuspids which extend into the lingual surface. Here soft foil is to be used in the starting of a filling, cohesive being used to finish if necessary. In occlusal surfaces of molars, where the sulci are burdened with fissures, soft foil to start the cohesive filling will expedite matters, and prevent "balling and rocking" of the gold. In labial and buccal surfaces of the lower teeth, when the operator has often the freedom of but one hand, the indication for soft foil in making the start is very apparent.

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*Demonstrated at the Ohio State Dental Society, December, 1902.

Used in the manner described, soft foil as a starter for cohesive foil fillings has always been a pleasure to handle, and resolves itself into a most powerful assistant.

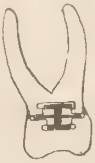
# CURRENT ARTICLES

[Condensed for THE DENTAL SUMMARY readers.]

## A NEW PORCELAIN CROWN FOR LOWER MOLARS AND A NEW METHOD OF ATTACHING CROWNS TO MOLAR ROOTS.

BY R. STANWAY PARRIS, L. D. S., ENG.

The unsuitability of most lower molar roots to take sufficiently strong posts for attaching porcelain crowns to them and the esthetic objections to gold crowns and large amalgam fillings in lower sixth and twelfth year molars, has led me to devise a new crown; in this, there is no amalgam shown on the surface when finished, broken porcelain is easily replaced without interfering with the root and attachment, and the roots are not interfered with except as regards dressing and filling the canals, these are done as usual.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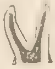
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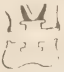
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The crown (Figs. 2 and 5), and the attachment (Fig. 3), are best described by the aid of illustrations. The crown has in the center a hollow; this hollow is undercut all round, and the porcelain at the base is also slightly hollowed to take the bed plate of the attachment (Fig. 3 A).

Of the retaining plates I keep several sizes, these plates are made in the workshop; a piece of No. 5, D. A. round wire forms the post, average height 3-16 of an inch. The middle plate, which I call the bed plate, is a piece of No. 4, 22k gold, slightly smaller than the shadows at the base of the crown. The top and bottom plates are of No. 7, D. A. plate, the size of the opening in the crown and of the average pulp chamber when squared up. It facilitates soldering to have holes in all three plates to closely fit the No. 5 wire. The plates should be made of a squarish shape with rounded corners to counteract rotation; this is also done by closely fitting the crown to the contiguous teeth.

The crown of the tooth is cut off level with the gum (Fig. 1), leaving the enamel margin untouched. In most cases, when level with the gum, the top of the pulp chamber is just exposed. The pulp chamber is cleared out and squared with a large cross-cut fissure bur in the right-angle attachment. If there is any danger of cutting too deeply, grind the top of the bur on a wheel and make it safe-ended. The roots can be now easily seen, cleaned and filled. The box-shaped chamber in the root is next undercut all round at the base with a large size wheel bur; these can be obtained safe-ended when necessary.

When decay extends below the gum, amalgam is used to restore the decayed portion, slight retaining being quite sufficient (Fig. 4), and the undercutting of the box chamber carried round only on the other three sides.

Choose your crown and let it down on the root with squares of articulating paper cut to size, articulate it to the upper teeth, and then try one of the attachments in your stock; this must fit without rocking (the rocking shows you have chosen one too high); a few touches with a file will enable you to bring the crown into position on the root, a slightly easy fit of the attachment inside should be aimed at.

I fix with Ames' New Process Oxy-phosphate of Copper, sometimes cementing attachment into the crown first and then on to the root, sometimes both at once.

I have attached one of these crowns with success on to an *upper* sixth year molar stump, removing an old black amalgam filling which occupied the anterior two-thirds of the crown.—*Extract Dental Record.*

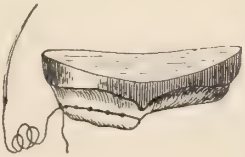
## BETTER TREATMENT OF TISSUE OVER EXCESSIVELY ABSORBED ALVEOLAR PROCESS.

BY W. T. CATES, D. D. S., CAMPBELLTON, N. B.

In bringing this case before you, let me state I encountered some difficulty, owing to the fact that a "subject" had to be made in a limited time with which to demonstrate a clinic, therefore, please pay no attention to its finish—look only at the principles involved.

You would naturally expect something new, perhaps, from an old practitioner. We will, at least, bring up an old and troublesome case under a new departure. Nearly all of those present will recognize the "subject" if they will press their thumbs upon the ridge at the highest point forward at the median line, which will show a want of support from the bone plates, which have been absorbed. This is caused by wearing an upper denture with excessive pressure from the inferior anterior teeth—pressure being absent where it is most needed, from the first bicuspids back, or posteriorly. I would like to say here that an upper denture should never be worn without this support from the lower back teeth.

The operation connected with this case, as presented, is a simple one; but should be performed under the most rigid and approved antiseptic methods. Antiseptic treatment followed throughout will insure a successful issue, in so far as you may



have a firm base to build upon. You will note from the rough model that the ligature is drawn very tightly over the part to be cut off; thence along about every half inch, or less, until the extreme part is reached to be cut off again.

The lower side of the model represents the soft tissues removed, and the higher side the half left to be operated upon. The tying or knotting should be in the centre of each puncture —a surgeon's knot that will not slip, and with equal strain upon all sides. Care must be observed not to pass the needle too closely to the bone, giving the tissues a chance to unite at the line of ligature without too much strain or "draw" over the process.—*Dominion Journal.*

# A FEW WORDS ON CARVED PORCELAIN CROWNS.

BY WILLIAM A. SPRING, D. D. S., DRESDEN, GERMANY.

The more common method of making an all-porcelain crown is to select a facing of suitable color and attach it to the base by soldering or clinching the pins to the dowel and then adding the porcelain backing. I find it almost as easy, however, to carve and bake the entire crown, and one saves thereby the selection of the facing, grinding, fitting of the same and the soldering of the pins.

The shade must be selected at this time, but size, shape and contour are indicated by the models. The carved crown is stronger because more homogeneous, and is especially advantageous in incisors with a close bite; in fact, I consider an incisor with a close bite quite unsafe if made by the facing method. There is no room for any attachment between pins and dowel, and the amount of porcelain over or back of the end of the dowel is dangerously slight. In the carved crown this stump of the dowel may be placed as far forward as desired, thus securing an equal bulk of porcelain all around it.

The method is simple from start to finish. A cap and dowel is made as for the Richmond crown, the buccal surface being well beveled and the dowel being allowed to protrude two millimeters, which is a little less than one-eighth of an inch. After soldering, the buccal surface should be beveled still more by grinding. I use a medium soft platinum 28 American gauge and a pin pounded out of iridoplatinum, gauge 14. Since no facing is to be used, the placing of the dowel so that the protruding end shall be in the thickest part of the porcelain becomes a simple matter. The cap is now placed upon the root and a bite impression taken with a small piece of modeling composition. The inside of the cap and the dowel is then waxed, placed into correct position on the impression and put up into the Bonwill articulator. Before baking it is well to introduce the cap into the furnace to remove any wax that hot water has failed to displace. A close body crown can be made with two bakes. If the biscuit bake is made to nearly reach the occluding tooth, one may carve to correct articulation, making no allowance for shrinkage on the grinding surface. That surface being carved, the crown is removed from the articulator and the circumference increased to make up for the shrinkage.—*Abstract Dental Review.*

# DON'TS IN GOLD FILLING.

BY GEORGE GOW, D. D. S., TORONTO, CAN.

Don't expect to get true, durable margins in gold fillings where the enamel margin of the cavity has been improperly prepared and beveled; and also do not mallet away from the margins, but always seek to work it in the general direction of the margins.

Don't proceed with the filling until you are positive that the portion of gold that covers the base and retention of the cavity at the starting-point are perfectly adapted.

Don't attempt to fill too sharp an angle with highly annealed gold, for the "balling" of the pellet and its harsh working will mislead you into thinking that you have perfectly filled the cavity.

Never attempt to work a piece of highly-annealed gold that has refused to go properly into position after it has been once tried.

In the course of a filling, don't add the second piece of gold until the first has been properly condensed.

Don't forget, when malleting a tender tooth, to sustain it by means of an instrument held firmly on the gold, thus enabling you to secure proper condensation without undue pain to the patient, and especially is this important in finishing the building of the gold where the last piece must be well annealed, and carefully gone over with a small point.—*Dominion.*

## QUICK REPAIR, USING VERNON GOLD.

BY ARTHUR W. SMITH, L. D. S., SIMCOE.

Last week a lady patient presented herself with broken second bicuspid facing on an upper right bridge (cuspid to first molar). Having no facings of suitable shade, and she being in a hurry to have it repaired, I thought of restoring it with Vernon gold. I kept the part dry by use of Johnson's cottonoid roll and napkin, and checking weeping of the gum. After picking away the remaining pieces of porcelain, I cleansed and dried the gold backing by use of chloroform, alcohol, and warm air. The first layer of gold was packed on with hand pressure, using a finely serrated amalgam plugger. I was gratified to find the gold adhere firmly to the backing, and continued to build up, using hand pressure and automatic plugger. The pins were solid, and gave additional support; also the gold filling was protected at the grinding surface by the backing being turned up.

The operation was quick, painless, and satisfactory, and when completed could not be detected from an all-gold bicuspid crown.—*Dominion.*

# SOCIETY PROCEEDINGS

## OHIO STATE DENTAL SOCIETY.

### DISCUSSION OF DR. E. C. KIRK'S PAPER.

### THE PREDISPOSING FACTOR IN DENTAL CARIES.*

DR. H. A. SMITH:—Abnormal saliva is undoubtedly an important factor in producing dental caries as well as other oral diseases. As clinicians we have done what we could to arrest the progress of dental caries, and whilst we have not totally failed, by years of experience which has been accompanied by many unaccountable failures, we have learned that filling teeth with gold foil or other material does not necessarily prevent the recurrence of caries. We have, however, learned that the environment of the teeth has much to do with the recurrence of caries, and we now believe that it is practicable to change this environment for the purpose of preventing recurrent caries.

Immunity to caries is a curious phenomenon, and may not always be accounted for or produced at will. I have in mind a patient who has been under my care for many years. I have probably made more than forty fillings for this patient. Some teeth have been refilled many times. It is curious, however, that there has never been any recurrent caries in the lower incisors. Most of the upper incisors have been refilled several times. The patient is now thirty-two years old and caries does not seem to be so prevalent, in fact, I have only had to make slight repairs during the last year or two. Why do some teeth in the same mouth decay while others do not? It may be that prophylactic precautions are more effectively applied to some than to others. If it is true that caries always begins beneath the so-called bacterial plaques, and if these plaques are so concealed that they are not removed by ordinary brushing of the teeth, this explanation may be sufficient. But cases have been under observation where the bacterial plaques are really present and still no caries is produced. So we are left somewhat in doubt on this point. But no more are we in doubt here than when we attribute caries to the chemical reactions of the saliva. It has long been believed that a continuously acid saliva would favor if not really bring about the destruction in some way of the hard tooth tissues. It is also believed that a continuously over alkaline saliva is no less detrimental. It seems to me that we may not undertake scientific prophylaxis until these questions are definitely determined. Preventive therapeutics is not practicable at present. If we knew that the cause of caries was a vitiated saliva, we could take such steps as might be necessary to change the character of the saliva, and so exercise the function of the physician in restoring the functions of the salivary glands to a normal condition, and so avoid the necessity of operative interference.

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* This Essay Appeared in the February Number of THE DENTAL SUMMARY.

Dr. J. Taft:—There is not much doubt in my mind but that predisposing causes of various kinds are important factors in causing dental caries. These causes are more numerous and complicated when we undertake to include the complications which may be introduced by the frequent fluctuations in the saliva poured into the oral cavity by the several salivary glands, each of which has a modifying influence.

In attempting an analysis of this hypothesis we must not forget that other factors of prime importance must also be considered. Defective or abnormal tooth structure has first of all and for a long time been considered an important consideration. Good tooth structure seemingly retards, while poor structure invites decay of the teeth. This has been so much noted that teeth have been referred to as *hard* or *soft;* and when soft, extraordinary prophylactic measures have been recommended, or expedients of various kinds have been advised to prevent or retard the progress of caries, such as filling materials of supposed therapeutic tendencies.

Lack of functional activity is a most important predisposing cause of caries. Teeth that are kept clean by constant use are less likely to be predisposed to caries. That systemic conditions accompanied by an impaired nervous function may produce a vitiated saliva, which of itself may prepare the way at least for the inception of caries, is also very evident, and when these saliva or mucus secretions are of such a character as to favor fermentative processes in the mouth, then surely the saliva becomes an important factor in spite of all other favorable surroundings including a vigorous function and a high development of the tooth tissues. The influence of nervous disturbances on the salivary secretions ought to be more carefully studied than it has ever been, with the intent of determining its influence in this matter. Many diseases affect the secretions of the glandular organs and the influence of these diseases in changing the character of the saliva must be clearly outlined before we can make any intelligible effort to counteract their harmful tendencies. It may be that this can best be done by working on the saliva and carefully noting the results or tendencies of the changed conditions on the teeth. It is a large but very important study and I trust it may be prosecuted to a satisfactory issue by the essayist and others engaged with him in this work.

Dr. T. W. Brophy:—When we first began to learn of the result of bacterial function in the mouth we concluded that lactic acid produced by fermentative processes was the active, if not the predisposing cause of dental caries. We also learned that these germs grew or developed in slightly alkaline solutions. It occurred to me at that time that the proper prophylactic mouth-washes were not to be found among those of an alkaline reaction, but such as would produce a neutral or acid reaction of the saliva. This I concluded would prohibit fermentation and prevent the formation of the active reagent which became the predisposing element of dental caries. If the saliva as it is poured into the mouth is the active cause of undesirable fermentative processes, we should know it and adopt such means as will change it in the mouth if we cannot do so in the glands, in order that it may not work mischief by its tendency to initiate dental caries by whatever process.

Dr. M. H. Fletcher:—The carnivora, snakes, and other animals digest bones without difficulty. Human digestion is also capable of doing so to a limited extent. At times the secretions of all or any of the glandular organs are changed from the normal. These secretions may be only slightly modified or become actually vitiated. The saliva is no exception to this rule. It is entirely reasonable to suppose that it may at some time be sufficiently changed to at least predispose the hard tissues to decay, if it does not actually produce solution of the tooth structure, as the nascent acid, which is supposed to accomplish this work, results from fermentative activity.

Dr. J. S. Cassidy:—It begins to look as though we were at last beginning to get a glimpse of more light on the solution of this vexing problem of the cause of dental caries. The essayist has not attempted to overturn our present notions as to the cause in general of this disease, but has added interesting data which, when properly worked out, will undoubtedly help to clear up this subject, and put us in a position to possibly bring it under prophylactic or therapeutic control. We already know very well what the fermentative processes are and also the results. And we have thought we knew something of the peculiar environments of the human mouth which made these processes work together for good in one case and evil in another. There are evidently conditions which we have not sufficiently studied and little understood which have baffled our skill. It begins to look as though a thorough understanding of the conditions of the oral secretions in the various systemic conditions, if it be practicable to obtain an accurate diagnosis in every case, will be of invaluable assistance in enabling us to prevent destructive results. I do not think local remedies of any potency can be used exclusively to prevent caries of the teeth. It is a larger subject, and we must take into consideration the influence of systemic conditions on the local environment before we can hope to successfully overcome this disease.

DR. E. S. TALBOT:—The work of Dr. Miller on the bacteria of the oral cavity has established certain facts indisputably, but it evidently, from what we have heard to-day, has not settled the question of the etiology of dental caries, at least as to the entire cause. I have no sympathy with the idea that there is no considerable variation in tooth structure. I think there is the same variety at least of difference in hard that we note in soft tissues. And if we do not take this fact into account we shall not be able to completely solve this question. In my studies I have found there is marked variation in the tooth structure of various nations of people. English people suffer more from dental caries than any other. It is a well-known fact that we cannot prevent caries by filling teeth, we only restore the tooth contour. We find some individuals almost entirely immune to caries and others immune at times.

Organs which are not in active use degenerate, and we find that the teeth are no exception. Because of the kind of food modern civilization lives upon, the teeth are becoming useless and naturally are being lost by disease and atrophy. Animals which use the teeth most, and those having large pulps, do not have caries.

Degenerate children do not have good teeth, because the nervous system is unstable, the teeth never develop properly and when developed they are not used properly and the environment of the mouth is such as to facilitate the progress of decay.

Degeneracy of the upper, as compared with the lower teeth, is due to the fact that the lower teeth are better nourished than the upper.

DR. C. M. WRIGHT:—This is one of the most interesting papers I have ever heard. It harmonizes with my notion of what a dentist's functions should be. We have for a long time confined our efforts to preventing caries as viewed from its exciting causes. We are now it seems to me going back to fundamental principles and looking for predisposing causes. We must now not only know how caries comes but how we shall treat or prevent it. The change in the oral secretions are so frequent and complicated that instruments and analytical tests of the greatest delicacy and accuracy will need be used to make adequate determinations. Quantitative as well as qualitative chemical analysis, bacteriological as well as physiological researches must be made of the secretions and these studied in their proper relations to systemic disorders, before we can hope to solve definitely this vast problem.

Dr. E. C. Kirk:—In closing this discussion I want to thank the audience for patiently hearing my paper, and those who have discussed it for apprehending my point of view of this subject, and also for the able manner in which they have amplified it.

Excessive development in fermentation will destroy the process by producing an unfavorable media for bacterial growth The phosphate of lime, however, preserves the equilibrium by using up the excess of acid produced. We can't stop dental caries, as Dr. Brophy suggests, by using an acid mouth wash. We should produce erosion in place of taking up the fermentative acids.

I do not wish to discuss the question of defective tooth structure further than to say that no matter how defective the tooth structure may be, it will not be subjected to caries without a bacterial fermentative environment.

In reply to the suggestion that we may learn something as to the manner in which caries is produced by remembering that bones are digested by certain animals. It is not very scientific to reach conclusions by analogy. I will illustrate the danger of such a procedure by the story of a priest who thought to reprove an Irishman for being drunk on the street, in saying to him: "Now, Patrick, what would you say if you were to meet me on the street in the condition that you are?" Pat quickly retorted: "Your Reverence. I wouldn't say a blessed word to any one."

# INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF EDUCATION.

JOINT GENERAL MEETING OF THE INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF EDUCATION WITH THE AMERICAN DENTAL SOCIETY OF EUROPE, STOCKHOLM, SWEDEN, AUGUST 16 TO AUGUST 19, 1902.

(Continued from Page 126, Vol. XXIII.

President Brophy then introduced Professor Lindstrom, as a man whose name was co-extensive with medicine and whose teaching in anatomy was known throughout the world.

PROFESSOR LINDSTROM :—I have the honor of submitting, at the request of the Swedish delegates to the International Commission of Education, the following short report on the three questions submitted to the consideration of the several delegates by the said Commission:

### REPORT OF DR. LINDSTROM (SWEDEN) ON THE THREE QUESTIONS PROPOSED.

The first of these questions is framed as follows: "What should be the preliminary requirements for admission into dental schools?" There is only one answer to this question, viz.: that if dentistry is accepted as a true specialty of the healing art, the dental candidate should be required to possess the same preliminary education as that required of the medical student. The answer to the third and last question, which reads, "What part of the studies that are taught in medical schools should be pursued by the dental student?" must be in harmony with the opinion expressed with regard to the first question. It is very plain that the same series of subjects should be studied by the dentist and by the physician, but as the study of medicine in this country requires from nine to ten years, the greater part of which is devoted to the theoretical branches, and as the commission in trusted with the organization of dental education had been asked to limit the length of the course to three years, it became impossible to arrange a plan of studies based upon a common education for both the dentist and the physician.

Following these principles, we organized our dental education five years ago. The curriculum is so arranged that the course is completed in three years. The curriculum embraces a theoretical course during the first year and a practical one during the second and third. Last year some preliminary work on prosthetic technics was introduced in the first year with very satisfactory results. The theoretical course is given by the professors of the medical school, and the practical course is given in a dental clinic especially organized for this purpose and in laboratories of operative dentistry and dental prosthesis, by teachers attached to these institutions.

The theoretical course embraces the following subjects: (1) Chemistry, Metallurgy, and Materia Medica; (2) Anatomy, Histology and

Embryology; (3) Physiology and Medical Physics; (4) General Pathology and Bacteriology.

The subjects of the practical course are as follows: (1) Surgery; (2) Dental Surgery; (3) Obturations; (4) Dental Prosthesis and Orthopedia.

I will now endeavor to answer the other question proposed by the Commission of Education:

*Answer*:—The first and second semesters are almost entirely devoted to the study of anatomy. The course is divided into two parts, dissection and microscopy. The program comprises general anatomy, systemic and topographic anatomy of the head and neck, special and comparative anatomy of the teeth and mouth; a general survey of the central nervous system and of the organization of the viscera. The course in histology includes general methods of technic, histology of the cells and tissues and special histology of the teeth and neighboring structures. In the course in embryology, a student takes up at the same time the general development of the organic system and the special development of the skull, face and teeth. I attach a special degree of importance to the evolution of the maxillæ and the teeth after birth, during the period of development, and during senile atrophy. The study of chemistry should comprise the most important features of inorganic and organic chemistry, especially in their relation to dentistry—metallurgy being included in this branch. The study of physiology refers to those parts which have a direct bearing upon the functions of the oral tissues. Materia medica is taken up in so far as it is related to dentistry. Toxicology, antiseptics, and general local anesthetics are also included in this group. The course in physiology should comprise the most important points of medical physics and human physiology, especially the physiology of the buccal cavity and neighboring structures. The course in general pathology and bacteriology comprises the most important elements of general pathology and pathological anatomy, the more important phenomena of local changes in the circulation, and passive and active changes of tissues, and must be accompanied by demonstrations, by means of anatomical preparations. The course also deals with the most important points in the science of micro-organisms and special mycology. After having passed the examinations in the subjects here enumerated, the students follow a course in surgery in the hospital during their second year. This course comprises elements of general surgical pathology, diseases of the buccal cavity and neighboring structures, including diseases of the skin and syphilis and aberrations of development. In Sweden, the students, as a rule, take up the study of dentistry at the age of nineteen or twenty, and after studying three or four years, take the professional examination, which confers upon them the right to practice. They enter upon the practice of their profession at an age where we may properly presume that they have a serious conception of their duties as practitioners of dentistry.

The report of Dr. Roy, the secretary-general of the International Commission of Education, was read in his absence by Professor Martinier, as follows:

## REPORT OF DR. MAURICE ROY ON THE THREE QUESTIONS PROPOSED BY THE INTERNATIONAL COMMISSION OF EDUCATION.

The three propositions which I have the honor to submit to the International Commission of Education of the International Dental Federation, in answer to the three questions set forth last year at our London-Cambridge session were first discussed and adopted by the Paris School of Dentistry, afterward by the commission of education of the National Dental Federation, and lastly by the whole French National Federation at their session of May 25, 1902. I have therefore the advantage of presenting the present report both in my own name and in that of the French National Dental Federation, which represents all the French dental associations, with the exception of two small provincial groups.

With respect to this I take the liberty of drawing your attention to an important point, which is that if, in their deliberations, the International Dental Federation would give, in addition to the personal opinion of their members, that of the national federation, it would afford a larger basis to the discussions of the international assembly. But for that purpose it would be necessary that national dental federations should be organized in every country—which, unfortunately, it not the case. For that reason it is desirable that the Executive Committee of the International Dental Federation should employ all its influence to constitute national federations in all those countries that have representatives among us. It is also desirable that, on their side, these representatives should, each in his respective country, take the initiative in organizations that are so important for the future of the International Dental Federation and for the interests of those whom it proposes to champion.

*First Question*:—"What are the preliminary studies to be required of students before beginning their professional education?"

The necessity of a sufficient general education is admitted by everyone and I think it needless to insist thereon. What we have more particularly to consider is—(1) The extent of such general education; and (2) the age at which it should finish.

These two considerations are in reality absolutely inseparable. For if the question of age had not to be considered, there would be no reason why one should limit the general education of the dentist, the general culture of a man being never too great, no matter to what branch of human industry he may be called. But for a dentist a limiting consideration here interposes—that is, the necessity of his beginning at an early period of life the study of his profession properly so called.

We think that the studies relating to general culture ought not to be prolonged beyond the age of sixteen; not that we think it necessary to commence dental studies at that age, but because we consider that the education of the future dentist should then assume a special character in order to prepare him progressively for dental studies properly so called.

It is to the two orders of instruction—gradual manual instruction on the one hand, general and elementary scientific instruction on the other—that the preliminary studies of the student of dentistry must be devoted from sixteen to eighteen, the normal age of admission to the school of dentistry. To these must be added the study of two living languages, the necessity of which has been felt at meetings like these we hold annually.

These different considerations have led us to propose to you to adopt, for the first question put by the International Dental Federation, the following answer, which is the reproduction of a wish expressed by the Congress of 1900:

The *preliminary education necessary* for the student of dentistry before admitted to follow his professional education must comprise:—

(1) A literary education with a knowledge of two living languages.
(2) An elementary knowledge of sciences.
(3) Manual instruction.

On these different orders of instruction we cannot seek for better inspiration than in the remarkable words of Sir Michael Foster when he speaks of the general basis on which all special education must rest. The broad basis, he says, must be "the discipline of the school; that is, the boy's school. I say the discipline rather than the learning of the school, for the aim of the schoolmaster should be in all cases the formation of the mind,—the setting of the instrument, not the filling of the bottle. The growth of habits of accuracy, of intentness, and of alertness, this rather than the gathering of mere knowledge of facts is the proper heritage of the school, and for the attainment of these habits it matters not so much what the boy is taught as how he is taught."

*Second Question*:—"In what are dental studies to consist, how long ought they to last, and what should be the order of the program?"

It is incontestable that a man's education is never too extensive; doubtless all knowledge is useful, but, as Sir Michael Foster in his address at Cambridge admirably remarks, "The power of the human mind to acquire and preserve knowledge is limited. On the other hand, the development of human knowledge is such that it is no longer possible for a man to be able, like Pic de la Mirandole, to descant *de omni scibili et quibusdam aliis* and that it becomes indispensable for a man to limit himself he wants to acquire, not a superficial acquaintance, but a profound knowledge of any branch of science whatsoever. As Dr. Godon remarks, quoting Herbert Spencer, in his excellent address at Cambridge, "'We that have but span-long lives' must ever bear in mind our limited time for acquisition."

The question of how long studies ought to last is therefore of extreme importance. Their duration must be perforce limited, and four or five years seems to be a maximum that cannot be exceeded.

Dental studies come under two heads: on the one hand scientific and medical studies, on the other technical studies. How are they to be divided?

We consider it indispensable to give a very notable pre-eminence to technical studies, and particularly to practical work. Dental therapeutics and its two corollaries, operative dentistry and prosthesis, admit of a very important manual part, necessitating a long apprenticeship both of the eye and the hand, hence the necessity of devoting a considerable part of the hours allotted to study to practical work (prosthesis and operative dentistry).

According to the calculations made by Dr. Godon in his thesis and previously by myself in my report to the Congress of 1900, a proportion of one-fifth of the hours of study devoted to the scientific and medical part of dental instruction appears to be sufficient. We think, therefore, that this proportion may be accepted as a basis on which the program of this part of dental instruction should be established.

The distribution alone should differ; scientific and medical lectures should predominate in the first years and technical lectures in the last. All the courses of lectures, especially the technical ones, should naturally be graduated according to the years of study.

It is desirable that a particular regulation should be made applying to doctors of medicine who intend to practice dentistry; and conformably to the wish expressed by the Congress of 1900, it should be obligatory for this category of students to attend for two years the classes of a school of dentistry. It would, however, be necessary to draw up a program of practical work for these students so as to allow of their going gradually through the program of practical work which normally extends over four years.

These diverse considerations being settled, we propose to you to adopt the following answer to the second question above stated:

(1) Dental studies comprise a scientific and medical part, and a technical part.

(2) Their duration must be at least four years.

(3) These studies must be organized conformably to a parallel method for all the classes—scientific and medical instruction and technical instruction simultaneously.

(4) It must be obligatory on medical graduates who purpose practicing the art of dentistry to attend, for at least two years, the lectures of a school of dentistry.

*Third Question:*—"What branch of the studies, as taught in medical schools, must the student of dentistry follow?"

After what we have just said on the preceding question, the answer to this last question does not admit of being extended. In the first place we reject completely, for reasons that have been often stated, and of which a few are here recalled, the assimilation of dental studies to medical studies and consequently the obligation of complete medical studies in order to practice the art of dentistry.

Irrespective of this absolute view of the question, is there an advantage for students of dentistry to follow certain teachings given in schools of medicine? We think not. As we have already said in our report on instruction, if it be indispensable that the student of dentistry should have a knowledge of anatomy, physiology, chemistry, and physics, it is not indispensable that his knowledge of these subjects should be as extensive as if he were destined to practice medicine or to take a degree in physical sciences. In the faculties of medicine lectures are given with a view to medical studies; it follows therefore, that students of dentistry having but a limited time to devote to them, can profit only to a limited extent by lectures of a higher order than is strictly necessary for their later studies, or else, should they devote sufficient time to them, unless their studies be prolonged, it must be to the detriment of their professional instruction.

We therefore propose to you, in answer to the third question, to adopt the following resolution:

"All the studies of students of dentistry must take place exclusively in schools of dentistry, except that of dissection in cases where it is impossible to procure dead bodies, but subject to the condition that the lectures be given exclusively for the use of such students."

Such are the reasons which have led us to adopt the three resolutions which I have the honor to submit for the approval of the International Dental Federation in the name of the French National Dental Federation, which resolutions I reproduce below:

First resolution:—

The preliminary education necessary for the student of dentistry before being admitted to follow his professional education must comprise:—

(1) A literary education with a knowledge of two living languages.

(2) An elementary knowledge of sciences.

(3) Manual instruction.

Second resolution:—

(1) Dental studies comprise a scientific and medical part and a technical part.

(2) Their duration is at least four years.

(3) These studies must be organized conformably to a parallel method for all the classes: scientific and medical instruction and technical instruction simultaneously.

(4) It must be obligatory on medical graduates who purpose practicing the art of dentistry, to attend, for at least two years, the lectures of a school of dentistry.

Third resolution:—

All the studies of students of dentistry must take place exclusively in schools of dentistry, except that of dissection in cases where it is impossible to procure dead bodies, but subject to the condition that the lectures be given exclusively for the use of such students.

### REPORT TO THE INTERNATIONAL COMMISSION OF EDUCATION BY PROFESSOR DR. HESSE, LEIPZIG, GERMANY.

Following the decision of the International Commission of Education, I have the honor of submitting the following answers to the questions proposed by the Commission:

*First*:—"What should be the preliminary requirements for admission into dental schools?"

*Answer*:—It should be similar to that required of medical students.

*Second*:—"What should be the length of time devoted to the study of dentistry, and the arrangement of the curriculum?"

*Answer*:—The duration of the course should be of three years at least. The curriculum should comprise—(*a*) Natural science, namely, physics and inorganic chemistry; (*b*) Medical sciences, viz.: anatomy, physiology, general pathology, bacteriology, embryology, general surgery, and materia medica; (*c*) the science and art of dentistry. In these studies a prominent place should be given to practical dental york. During all the time devoted to the various divisions of the course the dental student should be required to devote at least three hours daily to practical operative and technical studies. This course would have for the student the same value as the attendance at hospitals has for the medical student.

*Third*:—"What part of the subjects that are taught in medical schools should be pursued by the dental student?"

*Answer*:—The dental student should follow a general course in physics and chemistry, and should also follow a course in general anatomy, general pathology, embryology, and bacteriology. We recommend that a special course in general anatomy, physiology, general pathology, and materia medica should be given to dental students, as we deem that these topics embrace many features which are of no value to the dentist and which cannot be acquired in the lapse of time at the disposal of the dental student.

# SUGGESTIONS

### GOOD DRILLS.

Worn out inverted cone burs ground flat on opposite sides make splendid drills for general use.

### TRIGEMINAL NEURALGIA

has been treated with excellent results by Pieper (*Munch. med. Woch.*) with "Rheumatin," a new combination of salicylic acid and salts of quinine, in doses amounting to 4 grammes daily. It is a tatseless white powder with no unpleasant effects after protracted administration. Being very sparingly soluble is best given in cachets with copious drinks.—*Journal British Dental Association.*

### CARE OF THE CHIP-BLOWER.

The chip-blower should be frequently washed out with some agreeable antiseptic, to prevent bad odors which are very disagreeable to the patient.—*Dental World.*

### SENSITIVE NECKS OF TEETH.

Make an application of the carbonate of potassium in glycerine. We do not know who originated this treatment, but it has proved very effective, and it does not discolor like the nitrate of silver. Apply as often as seems necessary till sensitiveness is relieved.—*Dental Review.*

## WILL PORCELAIN FILLINGS LAST?

**W. T. Reeves.**

I have been putting porcelain fillings in since 1893. For about the first five years I only put them in for those who asked for them, and at their own risk, they having seen the work in some patient's mouth and wanted the same for themselves. As the number increased and I became more proficient in the work, the scope of cavities enlarged until it embraced all parts of the mouth; the result of the more extended use was the proving them to be the most permanent of any fillings those patients had. It was only through a slow, cautious and careful use of porcelain that it has become the chief material I use to-day, and why I am not embarrassed to answer the question, "Will it last?" And also why I place it first instead of second as compared with gold.—*Extract American Journal.*

## TUBE CROWNS.

**H. J. Goslee.**

In those cases of repair or replacement wherein the original crown has been broken away leaving the end of the dowel projecting slightly, and yet still secure in its attachment to the root, a well adapted crown may often be made without removing the dowel, which is sometimes difficult and often dangerous.

In the procedure the end of the dowel should be squared up and a tube made to fit it. This may be made of platinum foil about No. 40 or 60, or of pure gold about thirty-six gauge, and the joint should be soldered and the tube well reinforced in either instance.

If the crown is to be constructed with gold, a base of pure gold of the same gauge should be then perforated and adapted to the root and soldered to the tube, and the open end of the latter closed with a small disk of plate at the same time. Where it is desirable to construct the crown of porcelain both tube and disk should of course be made of platinum, and the soldering and reinforcing should be done with twenty-five per cent platinum solder.

The crown may be then completed on this base in the usual manner, and in accordance with the requirements of either style of construction when it may be mounted with cement. Where the dowel is too short to afford sufficient integrity in the attachment of such a crown, a greater degree of strength may be secured by slightly trephining its projecting end, and extending the tube into the root. No originality, however, is claimed in these suggestions.—*Review.*

## METHOD IN INLAY WORK.

**N. L. Burke.**

After platinum foil is burnished into the cavity, take a piece of gutta-percha a trifle larger than space in cavity, soften and pack into cup, the excess flowing out and over margins. This can be burnished against cavity margins with no danger of tearing platinum margins. As soon as gutta-percha is hard the platinum can be removed without danger of springing. Invest in any standard investment and after the investment has set, the gutta-percha can be removed by the use of hot air. If the platinum at the bottom of the cavity has been torn, no harm is done, as the putta-percha fills out the cavity wall, and the investment makes the outline for last platinum over which any of the high fusing porcelains will flow and bake in form. Since adapting this method I have not had one case of springing or warping, and have had perfect adaptation of both filling and margin.—*Review.*

## A METHOD OF REMAKING A VULCANITE DENTURE.

**D. Saville.**

It sometimes happens that in making a vulcanite piece some accident occurs—a broken tooth, a misplaced tooth, the vulcanite is cracked or broken, or is scraped, stoned and polished so thin, that, if put into the mouth, disaster is sure to follow. I will suppose that something of this kind has occurred. I do not want to have to explain to my patient that something has gone amiss, and that I have had to patch a new piece, or that I shall have to begin at the beginning and take a fresh impression of the mouth, because the model has been destroyed in vulcanizing.

To make a new piece which shall be just like the one already made, plus the alteration which has made remaking necessary, proceed as follows: Having made good the defective part with wax, tooth, etc., pour plaster into the piece and put it into the lower half of a flask (teeth upwards). Then smooth plaster, and when set, soap or oil it. Now build plaster all round the gum (if any) and teeth to the tops of the teeth. When the plaster is set shape it, slanting from the tops of the teeth down to the edge of the flask, and cut three V-shaped notches, one opposite the central incisors and one opposite each pair of bicuspids, cutting almost through to the teeth. Then soap and fill up flask, not shaking the plaster down, but using thin plaster and letting it flow down. When plaster is set the flask is opened and a few smart blows struck on the sides with a mallet. This causes the rim of plaster surrounding the teeth to fracture at the notches. The four pieces are placed in position in the upper half of the flask, the teeth are taken out of the vulcanite, put in place, and the case packed in the usual way.

When finished the piece will be as nearly as possible what the other was intended to be. An excellent way of taking teeth out of vulcanite (where *all* the teeth are to be removed) is one suggested to me by Mr. James Nicol. It is as follows: Fill a ladle with dry plaster, bury the piece in it, put on the fire or stove. When hot, hold the piece in tongs or pliers and push off the teeth.—*Journal British Dental Association.*

## TO REPAIR A BROKEN TOOTH.

**E. A. Randall.**

I sometimes put gold shell crown on bicuspid tooth that is too much decayed to fill, filling root-canal and building down with amalgam, then fitting gold crown over all. I had two such cases come back broken square off just beneath the margin of the gum. To repair them I took one of those pins that belong to a Davis' crown, set the base end of pin in the crown with cement, and opened up the root canal to receive the other end of pin, and without any grinding of fitting set it in position with cement. It is an easy and satisfactory way out of an uncomfortable position, as it only takes about fifteen minutes to complete the operation.—*Dominion Journal.*

## FILL THE JOINTS WITH GOLD.

If you are troubled with dark joints in using gum sections, grind a V-shaped space extending two-thirds across the joint, and, after investing, fill the space with a rope of gold foil.. After trying this you will discard all other methods.—*Western Dental Journal.*

## TIPPING OF PORCELAIN DUMMIES.

**H. H. Johnson.**

To tip a porcelain dummy, back up with 24k. gold 36g., allow backing to extend beyond the incisal end. Remove backing and flow 22k. solder over the cutting edge. Replace, file off excess and the tip is complete before the final soldering is commenced.—*Dental World.*

## PORCELAIN AS A TOOTH-SAVING MATERIAL.

**W. T. Reeves.**

I want to give you a fact or principle that has been overlooked by inlay workers, and it is one of the greatest points in favor of porcelain as a tooth-saving material. Gold, either in the form of filling or crown, no matter how highly polished, will tarnish and retain fine patches of food deposit, and increase the liability to decay of approximating tooth surfaces. Normal enamel is attacked by the acids of the mouth and roughened, and will then retain increasing amounts of food deposit, and caries follows. But porcelain, with the glaze of the furnace, will not retain any deposits in the slightest degree, and is not affected by the fluids of the mouth. Therefore, that tooth that has for contact point or approximating surfaces the glazed surface of a porcelain inlay is protected from the liability to decay to a greater extent than it was originally.—*Extract American Journal.*

## NO ADVANTAGE IN GROOVING INLAYS.

**W. T. Reeves.**

What strength can there be in a line of cement that would fill any groove you can cut in the reverse side of an inlay? I believe that just to the extent that you groove the inlay you have weakened the strength of retention. All inlays, large or small, extensive restorations in molars, and bicuspids, and corners and tips on the anterior teeth, I etch the reverse side with hydrofluoric acid, which removes the glaze and leaves a slightly roughened surface, without changing the close adaptation to interior of cavity as well as at the margins.

## A NEW OBTUNDENT.

**R. H. Hofheinz.**

I wish to recommend to the profession, for the treatment of hypersensitive dentin, the use of zinc chlorid in an alcoholic and chloroform solution instead of an aqueous one. I need not dwell on zinc chlorid as an obtunder. The pain is greatly lessened by the chloroform solution, and it acts more rapidly owing to the desiccating and obtunding effect of the chloroform.—*Cosmos.*

## GOOD SUGGESTIONS.

**H. L. Belcher.**

The life of the hypodermatic needle may be prolonged indefinitely by the use of a drop of oil after using; it prevents rusting, keeps in condition, etc.

In adjusting the "metallic separator," get lingual point in position first; it makes this a better adjustment and is not as liable to slip.

Peridental membrane "once injured is injured for all time." Beware of severe separation.

"Cementum will grow after the pulp is dead. It is the only dental tissue which does." Worth remembering in crown and bridge-work; cultivate the root.—*Extract Office and Laboratory.*

## HOW TO REMOVE RUST FROM POLISHED STEEL.

To remove rust from polished steel, potassium cyanid is excellent. Soak, if possible, the instrument to be cleansed in a solution of potassium cyanid in the proportion of one ounce of cyanid to four ounces of water. Allow this to act till all loose rust is removed, and then polish with cyanid soap. The latter is made as follows: Potassium cyanid, precipitated chalk, white castile soap. Make a saturated solution of the cyanid and add chalk sufficient to make a creamy paste. Add the soap cut in fine shavings, and thoroughly incorporate in a mortar. When the mixture is stiff cease to add the soap. It should be remembered that potassium cyanid is a virulent poison.—*Power and Transmission.*

## TREATMENT OF FRACTURED BICUSPID.

**Dr. Peck.**

I have seen quite a number of fractures in bicuspid teeth, and yet I do not think that I ever saw more than one tooth that was directly fractured in two equal parts through the cusps. That case was a first bicuspid tooth which had a small cavity in the crown filled with cement. The pulp had died. A few weeks ago the patient came in and said that the filling was out. Upon examination I found that the first bicuspid tooth had split in two equal parts. I immediately made a band, fitted it to the tooth, leaving the crown of the tooth completely exposed. This held so firmly that I was able to go on, treat the tooth and fill the small cavity in the centre of the crown.—*Brief.*

## AN EFFECTIVE ANESTHETIC.

**E. H. Browne.**

In the extraction of "worthless" teeth there is nothing *superior* to

| | | |
|---|---|---|
| Cocaine hydrochlorate | 1-2 | gr. |
| Morphine sulphate | 1-8 | gr. |
| Atrophine | 1-200 | gr. |

dissolved in

| | | |
|---|---|---|
| Aquæ pura | 6 | oz. |

and injected in the gums around the teeth to be extracted

The irritation of the gums following this dental anesthetic is very slight, and very often entirely absent.—*Extract American Journal.*

## STRENGTHENING LOOSE CENTRAL INCISORS.

**Dr. Wetzel.**

Dr. Wetzel's method of strengthening loose lower incisors is by first fitting a platinum plate to the lingual surfaces and another platinum band to the labial surfaces, lining these with cement and bolting the two together while the cement which is made to fill all the interstices is soft. The bolts or screws pass between the teeth. After the nuts are screwed down the bolts are cut off and polished. This apparatus never loosens, as do wires.—*Cosmos.*

## PRACTICAL POINTS.

**A. E. Mimmack.**

The engine bur makes a good instrument for condensing gold. It may be held in an engine bit holder, and is rolled over the surface of the filling, using hand pressure.

The use of vaseline on the ground surface of the neck of glass-capped medicine bottles will insure the easy removal of the cap with one hand.

The pound roll of Seabury & Johnson's surgeons lint may be cut into napkins of any desired size for dental use by the aid of the carving knife used as a saw. This will save a vast amount of tedious work.—*Dental Forum.*

## PRACTICAL SUGGESTIONS.

**Dr. Isham.**

Use baby ribbon to carry pumice between the teeth when polishing a filling. It is cheap and very effective.

Plaster of Paris which insists on sticking to a vulcanite plate, may be removed by placing the plate in water in which has been placed a small quantity of sulphate of potassium, allowing it to remain there a short time.—*Dental Forum.*

## CHRONIC APICAL ABSCESS.

**O. E. Inglis.**

I use deliquesced zinc chlorid, on a cotton twist, for the serous discharges of an inflamed surface (chronic apical abscess without fistula). It acts like a charm in promptly checking the discharges of blood and serum, and with no ill results, as a rule. Occasionally a little tenderness supervenes, but that follows as frequently, if not more so, in cases of this kind where the drug is not used.—*Dental Digest.*

# EDITORIAL

## BE A MASTER.

A short time ago there appeared in the newspapers an account of a western rider who recently, through a succession of triumphs, has won the title, "King of the Jockies."

Some years ago this same lad entered the field as a jockey and was taken east by a wealthy horse-owner, but there he failed miserably. He had faith and confidence in himself, however, and returning home, again set to work training. Time after time his mounts failed, but, undaunted by these unsuccessful attempts and with determination, he kept on training.

He delved deep into the secrets of his art and studied out the problems that go to make a successful jockey — "seat," "hand," and "judgment of pace."

This last year he won race after race, three and four a day during the entire season, and all horses, whether they were "sprinters" or "raters," were alike to him, for they all responded to his magic touch, and he got out all there was in them. And why? Simply because he had made himself a master of his art.

Believing in himself and his ability, and persevering when the way looked dark ahead and utter failure met him at every turn, he at last triumphed and now stands on the top rung of the ladder of fame in his line.

And so it is in any trade or profession. He who has the determination to succeed, and applies himself diligently to his task, profiting rather than being discouraged by his failures, is the one who eventually proves himself to be a complete success.

"The child through stumbling learns to walk erect," and it is through our failures that we learn the right.

No great man lives to-day but has made mistakes, but wise is he who profits by his errors and gains wisdom thereby.

The divine injunction, "Whatsoever thy hand findeth to do, do it with thy might," is a fitting motto to follow.

How many dentists there are to-day plodding in the same old rut. Most anything is good enough if it brings a fee. No thought of keeping pace with the rapidly advancing profession, and less thought for the good of their patients.

Such dentists are not the most successful, though they may worm a goodly sum out of the pockets of their patrons.

Success cannot be measured by mere dollars and cents. He is the most successful dentist who gives his patients the best of everything that dentistry has evolved, and who understandingly keeps himself posted on all the worthy advances made, and is able to apply this knowledge in his practise.

Be a master of your profession. Do not become so bigoted that you think you know it all and cannot learn more. This has been the cause of many a good man's downfall.

Like the lawyer and physician, the dentist must keep posted on the advances made in his profession if he expects to retain a position in the front rank. To do this it is essential that he be a reader. He ought to take the best of the dental journals, and read them regularly; he should attend dental society meetings; he should exchange ideas with his fellow dentists; he should be a close observer and be continually on the watch for suggestions that will be helpful to him in practice; in fact, he should be ever willing and anxious to learn, whether it be from superior or inferior, and determine to be a student so long as he is engaged in the practice of dentistry.

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## DENTAL COLLEGE TEACHERS' CONTRIBUTIONS.

In the current number of The Dental Summary we begin the publication of a series of original articles written for the benefit of the dental profession by teachers in the various dental colleges of America.

These articles promise to be of great value to our thousands of readers, coming as they do from men of prominence and wide reputation.

The subjects written upon will be mostly of a practical character covering the field of operative and prosthetic dentistry, orthodontia, oral surgery, materia medica, therapeutics, crown, bridge, and porcelain work, the citation of cases from practice, etc.

When men as hurried as our dental college teachers take time from their busy lives to write these contributions for the benefit of their fellow dentists, it reflects great credit on the contributors and insures a rare treat for those fortunate enough to have the benefit of their writings.

It shows also the unselfish spirit of the men who are shaping the minds of our future dentists, in sharing their original and progressive ideas with the profession at large.

It demonstrates that they are ever ready to aid in a worthy cause, and great praise should be their reward.

## DENTAL MANUFACTURERS' EXHIBIT.

Leading manufacturers of dental supplies are about to introduce a novelty in the way of a public exhibition of their goods and the giving of manufacturers' clinics, independent of any dental society meeting. The display will be given in Horticultural Hall, Philadelphia, March 17-19, 1903, and all members of the dental profession are cordially invited to visit it.

A joint exhibition of this sort has never before been given independent of a dental society meeting, but it is with the idea of getting in closer touch with the thousands of dentists who do not attend dental societies, as well as with those who do attend such meetings, that the exhibition is given.

They estimate that only about ten per cent. of the dentists ever attend a dental society meeting and therefore the manufacturers do not reap the full benefits in exhibiting at the societies alone.

If this first meeting proves as successful as expected, other similar exhibits will be given in different cities of the United States.

A dentist who does not embrace an opportunity to look at dental dealers' exhibits and inspect the many new appliances and instruments being constantly placed on the market, keeping posted, as it were, on the new things and their relative worth, will not keep up with the progress of dentistry.

No matter how divergent the opinions of the members of the dental profession in other matters, none will dispute that unless the dentist be ready to adopt the latest methods and appliances, he is pretty sure to be a failure both from a professional and a financial point of view. On this all dentists agree. A good place to post up on the very latest appliances is where you can see and compare them side by side. Attend the Dental Manufacturers' Exhibit and keep in touch with advanced ideas.

Many dentists who attend dental society meetings, are attracted there oftentimes more through the dealers' exhibits than by what the society itself has to offer. Indeed it is doubtful whether the societies would be attended as largely as now were the dental depots to withdraw their exhibts from the meetings.

Such displays are valuable to dentists, especially those living in country districts where they do not have the advantages of frequent visits to a dental depot.

It will be interesting to watch the result of this exhibition for it will demonstrate how many dentists in general are really interested in these improved appliances, instruments and supplies, the possession and use of which enables them to make better operations with greater ease and with the consumption of less time than with those, which, while they may truly be termed "time honored" are in reality inadequate for up-to-date dentistry.

## WE WANT YOUR PRACTICAL IDEAS.

This request is intended for every reader of THE DENTAL SUMMARY, whether a subscriber or not, and it is hoped that generous responses will be received from every one.

The progressive dentist wants practical ideas and methods that he can utilize to advantage in his daily practice.

THE DENTAL SUMMARY is attempting to supply this demand and desires contributions of this character from everybody, the more, the better.

Every dentist uses some original methods, appliances, or aids in his own practice, possibly without thinking of their real merits or how much others would be benefited by a knowledge of them, which should be given to the profession.

Will you not jot down these little helps and send them to us for publication? No matter if the article be short; the description of only one method, appliance or case in practice whether a whole page, half page, or only a quarter page, we want it. Such an exchange of practical ideas will not only benefit others, but yourself as well and will extend the reputation of every one who contributes. Send all contributions to the Editor DENTAL SUMMARY, Kent, Ohio.

READER, THIS MEANS YOU!

# DENTAL LAW FOR THE PHILIPPINE ISLANDS.*

## AN ACT REGULATING THE PRACTISE OF DENTISTRY IN THE PHILIPPINE ISLANDS.

*By authority of the United States, be it enacted by the Philippine Commission, that:*

SECTION I. The Commissioner of Public Health for the Philippine Islands shall appoint a Board of Dental Examiners for the Philippine Islands, with the advice and consent of the Board of Health for the Philippine Islands, consisting of three reputable practitioners of dental surgery, who shall be graduates in good standing of legally incorporated dental educational institutions recognized by the National Association of Dental Faculties and the National Association of Dental Examiners of the United States of America. They shall hold office for three years after their appointment, and until their successors are appointed and qualified: *Provided*, That the first appointees shall be appointed for a period of one, two and three years, respectively, as specified in their respective certificates of appointment from the Commissioner of Public Health: *And provided further*, That no member of the faculty of any school, college, or university in which dentistry is taught shall be eligible for appointment on said Board. Each person appointed to the Board shall qualify by taking and subscribing the following oath of office:

"I, .................., having been appointed a member of the Board of Dental Examiners for the Philippine Islands, do hereby solemnly swear that I am a graduate in good standing of the...................... at ............... in the city of ................., that I will well and truly perform all the duties of said office, that I will faithfully account for all moneys coming into my hands as such officer, that I will bear true faith and allegiance to the Government of the United States, and that I take this oath without any mental reservation whatsoever. So help me God."

The oath shall be filed and recorded in the office of the Secretary of the Board of Health for the Philippine Islands.

The Commissioner of Public Health shall fill any vacancy that may occur in the Board within one month after the vacancy occurs. The person so appointed to fill a vacancy shall hold office only for the unexpired term of the member whose place he is appointed to fill.

The Commissioner of Public Health may, with the advice and censent of the Board of Health for the Philippine Islands, remove any member of said Board for continued neglect of duty or incompetency, or for unprofessional or dishonorable conduct.

SEC. 2. The Board of Dental Examiners shall appertain to the Department of the Interior, so far as executive action may be required in connection with it. It shall organize immediately after the appointment of its members, and annualy thereafter on the anniversary of its first organization, by electing from its members a president, who shall be its chief executive officer, and a secretary-treasurer. It shall procure and keep a seal with which to attest its official acts. The members of the

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*Received through the kindness of Dr. Louis Ottofy, Manila, P. I.—Ed.

Board, except the secretary-treasurer, shall receive as compensation the sum of two and a half dollars each for each candidate examined for registration as doctor of dental surgery, and two dollars for each person examined for registration as *cirujano ministrante.* The secretary-treasurer shall received compensation at the rate of one hundred and fifty dollars per year, one-half of which amount shall be paid on the thirtieth of June and one-half on the thirty-first of December of each year. The amounts due the members of the Board of Examiners for compensation shall be paid from insular funds and disbursed by the disbursing officer of the Board of Health for the Philippine Islands. The secretary-treasurer shall execute a bond for five hundred dollars, with good and sufficient sureties, which shall be approved by the Treasurer of the Philippine Archipelago, conditioned that he will pay to the Treasurer of the Philippine Archipelago, all moneys received by him as treasurer. and that he will faithfully discharge all the duties of his office. He shall keep a record of the proceedings of the Board, and a register of all persons to whom certificates of registration as dental surgeons or undergraduates in dentistry have been granted under the provisions of this Act, setting forth the name, age, sex, and place of business of each, his post-office address, the name of the dental educational institution from which he graduated, or in which he has studied, and the date of such graduation or term of study, together with the time spent by him in the study of dentistry, and the names and locations of all other institutions which have granted to him degrees or certificates of clinics or lectures in dentistry, medicine or surgery.

SEC. 3. The Board of Dental Examiners shall meet in the city of Manila for the purpose of examining candidates desiring to practise dentistry in the Philippine Islands on the first Tuesdays of January and July of each year, after giving thirty days written or printed notice of such meeting to each candidate who has filed his name and address with the secretary-treasurer of the Board, and after publishing such notice in one newspaper published in the English language and one newspaper published in the Spanish language at Manila at least once per week for a like period. The Board of Dental Examiners shall issue a dental surgeon's certificate to each candidate who furnishes satisfactory proof of having received a diploma as either doctor of medicine or doctor of dental surgery from a legally incorporated dental educational institution, and who in addition passes a satisfactory examination before the Board in the following subjects: Anatomy, physiology, histology, physics, chemistry, metallurgy, dental anatomy and physiology, dental materia medica, therapeutics, dental pathology and bacteriology, orthodontia, oral surgery, operative dentistry, and prosthetic dentistry. For each such certificate the secretary-treasurer of the Board shall collect a fee of ten dollars.

The Board is further empowered to make such rules and regulations not in conflict with the provisions of this Act as may be necessary to carry said provisions into effect.

SEC. 4. The Board shall, on or before the thirtieth day of June of each year, make a report to the Secretary of the Interior of its proceedings during the past year, and of all moneys received and disbursed by it during that period.

SEC. 5. Sixty days after the first meeting of the Board of Dental Examiners for the Philippine Islands and subsequent to the passage of this act, it shall be unlawful for any person to practise dentistry in any of its branches in the Philippine Islands, without a certificate of registration from the Board of Dental Examiners or without having filed with the secretary-treasurer of said Board an affidavit, for the purpose of securing a registration certificate, setting forth the time and place in which he has practised dentistry in the Philippine Islands prior to the passage of this law: *Provided,* That dentists who have passed successful examinations before a board established by the Provost-Marshal-General, city of Manila, pursuant to authority from the Military Governor of the Philippine Islands, dated August second, eighteen hundred and ninety-nine, shall be furnished with a certificate of registration by the Board of Dental Examiners on payment of the required fee for registration without further examination: *Provided also,* That nothing in this Act shall apply to dental surgeons of the United States Army on duty in the Philippine Islands, nor in any way apply to or affect any person who was resident in the Philippine Islands and lawfully engaged in the practise of dentistry there prior to the passage of this Act; *And provided further,* That persons who have studied medicine in the Santo Tomas University at Manila for a period of not less than two years and who have received the title of "Cirujanos Ministrantes" and who have studied dentistry for the last four months of their course in such university, may be registered as undergraduates in dentistry upon passing a satisfactory examination before the Board, and, when so registered, shall be authorized to practise dentistry in remote towns where no regularly qualified dentist is available. The names of the towns in which each such undergraduate in dentistry is authorized to practise shall be included in his certificate of registration. The secretary-treasurer shall collect a fee of five dollars for each certificate of registration as undergraduate in dentistry issued by the Board.

SEC. 6. Every person engaged in the practise of dentistry in the Philippine Islands at the time of the passage of this Act shall within sixty days from the date of its passage register with the secreary-treasurer of the Board and pay the usual fee of registration, and the secretary-treasurer shall issue the usual certificate of registration to each person so registered. Any person failing to comply with this provision within the stated period shall be required to appear before the Board and pass a satisfactory examination before it shall be lawful for him to again engage in the practise of dentistry in the Philippine Islands.

SEC. 7. Any person shall be regarded as practising dentistry within the meaning of this Act who shall for a fee, salary, or other reward, paid to himself or to another person, perform any operation or part of an operation upon the human teeth or jaws, or who shall restore lost teeth, jaws, or portions of jaws artificially, or who shall treat diseases or lesions or correct malpositions thereof; but this provision shall not apply to artisans engaged in the mechanical construction of artificial dentures or other oral devices, or to students of dentistry practising in any legally chartered dental school or college on patients under the direct supervision of an instructor in such dental school or college: *And provided further,* That this provision shall not be construed to interfere with physicians or surgeons in their legitimate practise as defined by Act Numbered Three Hundred and Ten.

SEC. 8. Any two members of the Board may issue a temporary certificate of registration to an applicant upon the presentation by such applicant of satisfactory evidence that he possesses the necessary qualifications to practise dentistry, such certificate to remain in force only until the next regular meeting of the Board, at which time the person to whom it has been issued shall report for examination. Temporary licenses shall be granted only when the Board is not in session and will not meet within thirty days. In no case shall a temporary certificate of registration be renewed or extended, nor shall a second temporary certificate be granted to any person. The fee for a temporary certificate of registration shall be five dollars, and the applicant shall further deposit with the secretary-treasurer of the Board the sum of five dollars to complete the payment of his fee for a regular certificate. He shall also file with the secretary-treasurer of the Board an affidavit to the effect that it is his intention to appear at the next regular meeting of the Board and to submit to an examination with a view to obtaining a permanent certificate. Should he appear and pass a satisfactory examination, a permanent certificate shall be granted to him without additional charge. Should he fail to appear and pass such examination, the money deposited by him shall not be returned to him, but shall be paid to the Treasurer of the Philippine Archipelago.

SEC. 9. The Board of Dental Examiners shall refuse to issue either of the certificates provided for by this Act to any person convicted by a court of competent jurisdiction of any criminal offense, or to any person guilty of immoral or dishonorable conduct or of unsound mind, and in the event of such refusal shall give to the applicant a written statement setting forth the reason for its action, which statement shall be incorporated in the record of the Board. The Board may revoke a certificate for like cause, or for unprofessional conduct after due notice to the person interested and on hearing, subject to an appeal to the Board of Health for the Philippine Islands, the decision of which shall be final.

SEC. 10. Every practitioner of dentistry shall display in a conspicuous place upon the house or office where he practises, his full name, and he shall further display his certificate of registration in his office in plain sight of patients occupying his dental chair. Any person violating this provision shall, upon conviction, be punished by a fine of not less than twenty-five nor more than one hundred dollars for each offense. Any owner, proprietor or manager of a dental office or establishment who shall fail to cause to be displayed as provided in this section the registration certificate of each person practising dentistry in such office or establishment shall, upon conviction, be punished by a like fine.

SEC. 11. No person shall in any way advertise as bachelor of dental surgery, doctor of dental surgery, master of dental surgery, licentiate of dental surgery, doctor of dental medicine or dental surgeon, or append the letters B. D. S., D. D. S., M. D. S., L. D. S., or D. M. D. to his name, who has not had duly conferred upon him by diploma from some school, college, university or board of examiners legally qualified to confer the same, the right to assume said title, nor shall any person assume any title or prefix or append any letters to his name to represent falsely that he has received a dental degree or certificate of registration. Any person violating this provision shall, upon conviction, be subject to a fine of not more than one hundred dollars or to imprisonment for not more than ninety days.

SEC. 12. Where the word "dollars" is used in this Act, it shall be understood to mean dollars in money of the United States.

SEC. 13. This Act shall take effect on its passage.

Enacted, January 10, 1903.

# SOCIETY

## NEBRASKA STATE DENTAL SOCIETY.

The next meeting of this society will be held in Lincoln, Nebraska, May 19-22, 1903.

H. R. Hatfield, *Cor. Sec'y,*
York, Neb.

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## MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Michigan State Board of Dental Examiners will be held in Grand Rapids on May 12th, 1903.

C. J. Gray, *Sec'y,*
Petoskey, Mich.

# AFTERMATH

## PERSONAL AND MISCELLANY.

Dr. E. H. Angle, of Saint Louis, gave a stereopticon lecture before the New York Odontological Society January 21, to the dentists of Philadelphia January 23, and a special lecture at the Ohio Medical University Dental College, Columbus, Ohio, on the evening of January 27th.

Dr. W. T. Reeves, of Chicago, gave a lecture to the students of the University of Pennsylvania at Philadelphia, on Jan. 30th.

Dr. F. G. Baird has been reappointed a member of the State Board of Dental Examiners of California, by Gov. Pardee.

Dr. F. M. Metzgar, Prescott, Arizona, has been appointed a member of the State Board of Dental Examiners of Arizona.

Dr. F. W. Blomiley, Sioux Falls, S. D., died Jan. 28th. Age 53.

Dr. W. H. Roper, of Reedsburg, Wis., was married Jan. 1st to Miss Harriet C. St. Dennis, of Mankato, Minn.

Dr. R. L. Tower, Yankton, S. D., was married Jan. 1st, to Miss Lodie Martin, Aberdeen, S. D.

Dr. J. M. McKim, La Belle, Mo., died Jan. 22.

Dr. J. D. Forsythe, committed suicide at Butte, Mont. Jan. 31st.

Dr. T. O. Sherman, Cairo, Ill., died of pneumonia, Jan 28th. Age 33.

Dr. J. H. Martin, Chicago, died Jan. 15th, from heart disease. Age 56.

Dr. F. S. James, Winona, Minn., has been appointed to succeed Dr. M. B. Cullom on the State Board of Dental Examiners of Minnesota. Dr. F. E. Moody has been reappointed on the same Board.

Dr. J. G. Leffingwell, Pittsburg, Pa., died from pneumonia, Jan. 30th.

An Amendment to the California Dental Law:—Senator Caldwell has introduced a bill which amends the dental law of California by a new section, providing that any dentist may have his license revoked when convicted of a felony or misdemeanor involving moral turpitude, or for unprofessional conduct, gross ignorance or inefficiency in his profession. Unprofessional conduct is outlined as employing "cappers" or "steerers" to obtain business, obtaining fees by misrepresentation, betraying professional secrets, employing any student or suspended or unlicensed dentist to perform operations or treat lesions of the human teeth, jaws, etc.

LOSS BY FIRE:—Dr. Borland, Tobias, Neb., lost $200 worth of property by fire Jan. 26th.

EAST SAINT LOUIS DENTAL SOCIETY was organized Jan. 25th. Dr. A. Godejohann was elected president, and Dr. J. C. Reader secretary.

SET FIRE TO HIS DENTAL OFFICE TO SECURE INSURANCE:—Dr. E. T. Johnson, Pollston, Mich., removed his effects from his dental office and then set fire to the building with the intention of securing insurance. He was found guilty of the act and sentenced to five years in the penitentiary.

ABSCESSED TOOTH CAUSED DEATH of Mr. Henry Ritter, at Dubuque, Iowa, Jan. 7th. We were unable to obtain the particulars.—ED.

DEATH FROM TOOTH EXTRACTION:—Mrs. Helen Friedl, Sioux City, Iowa, died Jan. 13th from hemorrhage, following the extraction of a tooth. She was anemic and all efforts to stop the bleeding failed, the patient dying several days after the operation. She was 30 years of age.

HELD UP AND ROBBED:—Dr. G. B. Dodd, St. Paul, was held up Jan. 14th. The robbers took what they supposed to be the doctor's wallet and left, but the supposed wallet contained only a treatise on clinics, and the doctor saved his watch and $25 he had in another pocket.

VALUABLE GIFT TO A DENTAL COLLEGE:—Dr. A. F. Emminger, Columbus, Ohio., has given the dental journals he has accumulated since 1866 to the Dental College, Ohio Medical University, for its library.

HE IS THE WHOLE THING:—The advertisement of a rural practitioner reads in this way: "Teeth pulled and limbs cut off while you wait. Also, night school and music teachin'. Terms, cash in advance. Chickens and eggs is good as money. Also, wood taken—oak and pine."—*Atlanta Constitution.*

LOSS BY FIRE:—Dr. D. G. Barnitz, Roanoke, Va., suffered a loss of $1,000 by fire on Jan. 15th. Insurance about $600.

FINED FOR PRACTISING WITHOUT A LICENSE:—A. J. Meglemry, who claims to be a dentist and a good one, was fined $75 at Bowling Green, Ky., Jan. 27, for practising without a diploma. His troubles are not ended yet, for the State Dental Board is after him for alleged offenses, numerous and serious. The charge against him is that he has been using brass instead of gold for bridge-work.

ACHING TEETH CAUSE SUICIDE:—Driven to distraction by aching teeth, E. Garris, a prominent farmer of Stanford, Ill., hanged himself Jan. 19th.

DENTAL OFFICES ROBBED:—At Edwardsville, Ill., Drs. Schwartz & Schwartz lost about $6.00 worth of gold, and Dr. E. L. Burroughs about $20.00 worth of foil, by burglars, Jan. 30th.

LOWELL DENTAL SOCIETY:—Officers elected for ensuing year are: President, Charles F. Harris; vice-presidents, Benj. A. Heald, Walter E. Knapp; secretary, Edwin E. Kinney; treasurer, F. G. Guilliland.

LORAIN COUNTY, OHIO, DENTAL SOCIETY:—Officers chosen for the coming year are: Dr. Kipling of Lorain, president; Dr. Wherry, of Elyria, vice-president, and Dr. Daniel Husted, of Oberlin, secretary.

DIED FROM HEMORRHAGE FOLLOWING TOOTH EXTRACTION:—Mr. W. B. Dallas died in Minneapolis, Jan. 22nd, from hemorrhage, following the extraction of two incisor teeth. It was not known who extracted the teeth.

SOUTHERN DENTAL SOCIETY OF NEW JERSEY elected officers as follows: President, Dr. J. G. Halsey; vice-president, Dr. Alphonso Irwin; recording secretary, Dr. S. I. Callahan; corresponding secretary, Dr. Cromwell Ironside; treasurer, Dr. Mary A. Morrison.

A DENTIST'S NARROW ESCAPE FROM DEATH:—Dr. E. B. Lodge, Cleveland, Ohio, had a narrow escape from death by fire Jan. 19th. The building in which his office was located was burned and two women in the building were burned to death and about twenty other tenants narrowly escaped a similar fate. Dr. Lodge writes: "My rooms consisted of an entire suite of six, located on the second floor. The alarm of fire was given about 12:30 A. M. The flames spread with most violent rapidity, and tenants of the apartment house made their escape from all sides of the building, wherever opportunity offered, for the escape by way of the hall was cut off by flames. I succeeded in dressing partially and in saving a trunk, violin and ledgers, throwing them out of the window, after which I made my escape by means of a cherry tree near the side of the building. My dental outfit, new and expensive electrical equipment, my libraries, both professional and general, the collection of a lifetime, were wholly consumed, the total loss being over $2,000; insurance, $1,000." (We congratulate Dr. Lodge on his escape, but sympathize with him in his irreparable loss.)—ED.

THE BACTERICIDE POWER OF MUCUS:—Arloing has recently undertaken anew the study of the relation of mucus to bacterial life and development. By an extended series of experiments, the author has shown (*Journal de Pathologie Generale,* 1902) that mucin has a decided bactericide power upon microbes in general, destroying spores as well as growing bacteria. Its action is especially decided upon aerobies; but is nevertheless positive, though less active, with anaerobies. From these experiments it appears, then, that mucus is not simply a lubricating agent, but is a powerful means of defense for the body against its most dangerous foes. The coated tongue is, then, not simply an indication of some gastric derangement, but indicates that the mucus of the mouth has lost its bactericide power in consequence of the general deterioration of the whole body and of the lowering of the general vital resistance.

THE MOST SENSITIVE PART OF THE HUMAN BODY is the tip of the tongue. Next come the lips and then the tips of the fingers.

THE TEETH OF THE AFRICAN NEGRO:—With regard to the beautiful teeth of the African negro, which many of us would suppose are naturally so, independently of any special care, I am assured by a member of this institution, who has spent many months among tribes near the region of Lake Nyassa, that the natives with whom he became acquainted, far from leaving the care of their teeth to chance, spent the whole of their evening leisure, between the last meal of the day and the hour of retiring to sleep, in most carefully picking and cleansing their teeth and gums, with the aid of stiff brushes made by bruising the end of small canes or twigs. This, he alleges, they did not from motives of fastidiousness, but as a necessity of life; well knowing that the skilful preservation of their teeth is needful to maintain the bodily health and strength by which alone they can hope to prevail in the struggle for existence.—*R. Parker, Dental Review.*

A NEW LOCAL ANESTHETIC:—Hungarian dentists and chemists claim to have discovered an anesthetic, an alkaloid, nervocidine, the hydrochloride of which is stated to have similar properties to cocaine, but to produce a much more lasting anæsthesia. The base is obtained from an Indian plant, "Gasu Basu," the properties of the leaves of which were first discovered by D. Dalma, who successfully employed them in painful pulpitis with such good results that he reported that the drug might displace arsenic for dental purposes. B. von Fenyvessy has investigated the properties of the alkaloidal hydrochloride, as prepared by Dalma, which is a yellow, amorphous, hygroscopic powder, readily soluble in water. It produces marked anæsthesia of the cornea in 0.1 or 0.2 per cent solution, which is very persistent, and a 0.1 per cent solution brushed on the mucus membrane of the cheek also gives marked anæsthesia. Stronger solutions, exceeding 0.5 per cent, produce irritation of the cornea, and a 2 per cent solution causes ulcerative keratitis in dogs and rabbits, which lasts ten days, during which period the anæsthesia also lasts. It does not appear to produce anæsthesia by subcutaneous injection. Its general effect is that of a paralyzing poison. Although its anesthetic effect is much more prolonged than that of cocaine, the length of time necessary before this effect supervenes, the irritation caused by the drug, and the toxic symptoms it produces, do not point to the probability of its being of general service, except perhaps in dental practise.—*Lancet.*

POOR TEETH AND CRIME:—A bill recently was introduced in the Massachusetts legislature "to provide for the better care, preservation, and development of the denture of minor inmates of the public institutions of the commonwealth." The bill has the support of the associated charities organization and of the state. Put in the fewest possible words, the argument of the dentists is that "poor teeth cause indigestion, irritability of the stomach causes a craving for stimulants, and stimulants cause crime." Therefore, in order to repress crime he would have dispensaries for dental treatment, regular examination of the teeth of public school pupils, a tooth brush in every family, and regulations prescribing its use.

LONGEVITY FAD:—Last year salt was the fad of doctors. If a man died it was because his system lacked chloride of sodium, and every time a statesman or prosperous advertiser had a headache some doctor wanted to rip him open and hang up a bag of salt in his anatomy. Before that, water was the secret of health and people tried vainly to fill themselves up to the neck with water so they would gurgle like a hot water-bag. Now electricity is the proper caper. Prof. Loeb, of the Chicago University, has discovered that electricity is the basis of life and that electricity does all the chores for the anatomy that salt or water used to do. Salt, water or electricity is all the same to the man with good digestion and a healthy mind. Doctors have been like boys who take apart clocks to see what makes the wheels go. They decide on one wheel to-day and another to-morrow and so on. In the meantime people live about as long and even longer than they did 5,000 years ago.

# MANUFACTURERS' NOTES

The Dental Manufacturers' Exhibit, March 17, 18, 19, Horticultural Hall, Philadelphia, Pa.

Horticultural Hall is located corner Broad and Locust streets.

Many of the manufacturers of the Dental Manufacturers' Exhibit will give away quite valuable samples.

Three thousand dentists will attend the Dental Manufacturers' Exhibit.

Porcelain inlay-work is taking the lead in the dental mind to-day. The Custer Electric Oven will be at work at the Dental Manufacturers' Exhibit. Why not bring along some work for it to bake for you?

Treat yourself to a subscription to THE DENTAL SUMMARY. Order to-day or at the Manufacturers' Exhibit.

The management of the Dental Manufacturers' Exhibit is promised an unusually interesting exhibit by the Consolidated Dental Manufacturing Co. This Company has arranged for some very instructive demonstrations, among others one showing a way to attach the Davis Crown to the pin by the employment of porcelain as described in the January *Items of Interest.*

The dental profession is now greatly interested in Porcelain Inlay-work, and is investigating the merits of the different ovens and materials. Jenkins' oven and porcelain have a splendid reputation. Both these articles will be entertainingly demonstrated at the coming Dental Manufacturers' Exhibit by a member of the Company who returns from the south for the purpose.

The demand for the Sibley chair is steadily increasing. The inside construction of one of these chairs will be shown at the Dental Manufacturers' Exhibit.

It has reached the point where no dentist can think of good dental cabinets without thinking of The Ransom & Randolph Co.'s. Nor can he see an abscessed tooth without recalling the fact that "Oxpara cures abscesses."

A dentist from the west made the statement: "If I had bought a Practical Operating Stool ten years ago I would now be five years younger."

It is generally safe to pin one's faith to an article that will stand extensive advertising.

One of the many new things to be shown at the Dental Manufacturers' Exhibit is a new inhaler with a celluloid face-piece. This is especially useful for administering Narcotile, the new anesthetic which is so much superior to gas. Narcotile will also be demonstrated. Both of the above will be in Ash & Son's exhibit.

THE DENTAL SUMMARY gives you the cream of valuable dental knowledge.

The alternating current engines made by the Ritter Co., have proved a phenomenal success; over 1,000 have been sold in the past two years. This engine will be on display at the Dental Manufacturers' Exhibit.

Give your newspaper-reporter friend a good cigar and tell him you are going to the Dental Manufacturers' Exhibit, March 17, 18, 19. You'll get your money back.

One of the puzzles of any large dental exhibit is: "How many dollars' worth of gold is there in J. M. Ney & Co.'s display?" The man who guesses correctly can have the display—that is if the genial Harry Ney says he can.

For some time The Ransom & Randolph Co. have been at work on a laboratory cabinet that will be far superior to anything on the market. It will be shown for the first time at the Dental Manufacturers' Exhibit.

The Turner Brass Works, Chicago, is preparing a 75-page catalogue, illustrating and describing the goods they manufacture for the dental profession—also containing many useful hints concerning the preparation and baking of porcelain. They will send a copy of this catalogue to any one who is interested and sends his name and address.

A dentist may visit the Dental Manufacturers' Exhibit for the sole purpose of buying goods. That's only part of the value of his trip. It would pay him to go even if he buys every dollars' worth of his goods at home. The mind, however bright, that follows for a long period one line of thought becomes jaded. The stay-at-home dentist grows stale. He keeps too close to business to reason well about it. The result is distorted vision—trifling affairs become important and great things are neglected. He forms certain habits of thought. When he hears of something new or better, he does not believe it—prefers not to believe it. A departure from accepted ideas distresses him. Settled convictions are costly. A dentist's facts, like a scientist's, should be subject to revision.—*Adopted from "The Open Mind."*

The management of the Dental Manufacturers' Exhibit is promised an unusually nice display by the Cleveland Dental Mfg. Co.

There is a truth about a lie, and that is, that if you let it alone it will chase itself to death.

Dr. Chas. K. Teter has invented a gas and oxygen apparatus. It will be made and marketed by the Cleveland Dental Mfg. Co. See it at their exhibit.

Our faults attract more attention than our virtues.

Hall & Ruckel, of New York—the Sozodont people—always make a beautiful display wherever they exhibit, and at the Dental Manufacturers' Exhibit they will try to outdo themselves. It is currently reported that they will give away samples of their excellent powder and wash, but keep this to yourself or there will be a "run on the bank."

Since the reduction of the price of Moore's mandrels, a certain little factory in Detroit, Michigan, has been running full time, thank you, making the popular Moore mandrels, disks and other specialties. Dr. E. C. Moore knows all about his own goods and will be glad to get you as enthusiastic as he is himself if you will give him half a chance at the Dental Manufacturers' Exhibit. It won't be hard to do.

It is a strange thing that the man who has the worst reputation is usually the one who is most afraid of having it injured.

A prominent dentist has discovered that the liquid used with Oxpara is a good obtundent.

The last cabinet put out by The Ransom & Randolph Co. (No. 66) is the most complete article of the kind imaginable. It is the result of several years of experience and study, and therefore should be a good one.

The Ritter Dental Mfg. Co. were the first to put an alternating current engine on the market, and now it is to be followed by an alternating current lathe-motor.

The articles to be displayed at the coming Dental Manufacturers' Exhibit can be purchased through any dealer in the world.

The A. P. Gould Company, Canton, Ohio, manufacturers of dental and surgical chairs, will have on display at the Dental Manufacturers' Exhibit their new Ohio Dental Chair. The exhibit is in charge of Mr. A. P. Gould, the inventor, who will take great pleasure in demonstrating the merits of the line manufactured by his Company.

Be patient. Keep a plugging and you'll get there; a man can walk further in a day than he can run.

Since so much money has been expended advertising the efficient preparation OXPARA, "all kinds" of inferior substitutes, making the old, old "just as good" claim, are struggling for recognition. One of the worst features of the substitutes is that they discolor the tooth.

Better the gain of much information at the Dental Manufacturers' Exhibit for your financial benefit than the gain of a few paltry dollars at home March 17-18-19.

The Florence Mfg. Co. make the Prophylactic Tooth Brush of world-wide fame. Their display at the Dental Manufacturers' Exhibit will be a fine one.

It seems rather odd to have any one demonstrate the use of Ney's golds, so many dentists use them, but J. M. Ney & Co. will not be outdone by other gold manufacturers at the Dental Manufacturers' Exhibit. Dr. Monroe Griswold will give continuous demonstrations. Read Ney & Co.'s advertisements on pages 36 and 37.

The January number of *Dental Hints* published in Augusta, Ga., was mailed to subscribers in February. The Editor wishes readers a Happy and Prosperous New Year." Now the question is, which year?

Porcelain inlay-work will be exploited by several expert clinicians at the Dental Manufacturers' Exhibit. Some will use one make of material and some another. Some will use one style of furnace and some another, but all will be interesting.

When a man has no temptations it is comparatively easy for him to be honest.

Three or four trips to the Dental Manufacturers' Exhibit will equal a post-graduate course.

The Electro Dental Mfg. Co. will have a fine display of engines, lathes, etc., at the coming Exhibit. Thinking of taking life easier? Better look them over.

The worst people in the world are the richest and the poorest.

Every dentist and dental student is welcome at the Dental Manufacturers' Exhibit. Come early, stay all the time, go late.

Two kinds of rubber-dam are made by the Traun Rubber Co.—the "New Ideal" and "Old Fashioned." Paradoxical though it may seem, the "Old Fashioned" is the newest and the "New Ideal" is the oldest. Samples of each kind along with a line of convincing arguments will be handed out gratuitously at the Dental Manufacturers' Exhibit.

The dental dealers of the country will take advantage of the Dental Manufacturers' Exhibit by being present for the purpose of inspecting and ordering the many new specialties to be exhibited for the first time. Two at least will come from Canada for this purpose.

The Turner Prosthetic Dental Systems are designed to assist practitioners in dental science to acquire the finer results in prosthetic practise that are held by them to be ideal. The systems will be fully demonstrated at the Dental Manufacturer's Exhibit.

There is no use wasting nice conversation on the patient who won't listen to clean-cut facts.

The Dental Manufacturers' Exhibit will be the largest gathering of Dental Manufacturers ever assembled.

The use and merits of de Trey's Gold will be demonstrated at the Dental Manufacturers' Exhibit. It will be shown how easily a filling may be started where there is but little retention and how an over-malleted surface can be healed.

Several dentists from sections far beyond those from which the management of the Dental Manufacturers' Exhibit hoped to draw, have expressed themselves as intending to attend.

The exhibitors at the coming Dental Manufacturers' Exhibit will represent first-class houses only. Applicants for space not in this class have been discouraged from attending or positively refused admittance. Every article to be displayed will bear the "hall-mark" of reliability.

That person who is so unfortunate as to be compelled to wear a vulcanite plate, should have one of the best. An aluminum lining is a vast improvement over the plain vulcanite. It is more cleanly and saves a vast amount of irritation of the tissues. An aluminum lining being put out by S. Eldred Gilbert is meeting with a great deal of success.

However extended the dentist's knowledge and training, however great his skill, however keen his professional zeal, they should be reinforced by the employment of the most modern and approved appliances.

One of the most interesting and instructive displays at the Dental Manufacturers' Exhibit will be that of J. M. Ney & Company, the leading American gold refiners. Ney's Gold exhibits have long been famous at society meetings and conventions but this will be the largest and finest display the Company has ever made.

Everything at the Dental Manufacturers' Exhibit will *go*. Electric Engines will be running, Lathe-Motors will be humming, Porcelain Furnaces will be baking, Fountain Cuspidors will be working, and last but not least, the most skilful demonstrators in the United States will be on hand to fully explain the advantages of all the new devices and appliances. The dentist who misses this opportunity throws over his shoulder the best one that has come along since he left college.

The Dentists' Supply Co., of New York, have engaged large space at the Dental Manufacturers' Exhibit that their display may be made one of the most interesting.

Many dentists let a pet theory obstruct their vision. They judge dental goods by the "prettiness" of the wrapper or the place it comes from. The men who make good dentists experiment and when they find an article which gives the result looked for they stick to it.

"Nothing but Teeth" is the catch advertising phrase of the Pennsylvania Dental Mfg. Co. At the coming Exhibit they will display their full line.

You can't avoid abuse any way you fix it. If you husband your funds to provide against poverty in your old age, people say you have no soul and money is your God. If you are a spendthrift, people say you are shiftless, and some day you'll be sorry.

By using Pohlman's Gold Plating Solution, put out by the S. Eldred Gilbert Dental Mfg. Co., you can plate your regulating appliances, crowns, bridges, etc., with a 24k gold plating, without the use of a battery. This outfit will be displayed at the Dental Manufacturers' Exhibit.

It is certain that the man with the hoe will always be envious and angry when he thinks of the man with the dough.

Dr. R. C. Brophy's Imperial Investment Compound has made a phenomenal record. Though but comparatively recently placed upon the market, it is being used throughout the United States, Europe and Australia. See it at the Dental Manufacturers' Exhibit.

A specialist is a man who has discovered which one of his talents will bring the most money.

Phonol Sodique. There is hardly a practitioner in the profession of the older ones who does not know and use this preparation. Hance Bros. & White have lately begun to tell the younger men about its good qualities and its sale is rapidly increasing. It's hard to keep a good thing down if you let buyers know about it. Hear all about Phonol Sodique in space No. 42, Dental Manufacturers' Exhibit.

The Ritter Dental Mfg. Co. will exhibit their sectional chair-base, at the Dental Manufacturers' Exhibit. No doubt, as usual, this will be a source of much interest to those contemplating the purchase of a chair.

We understand the well-known firm of Ash & Sons, of New York, have imported a very full line of English dental specialties for exhibition purposes at the coming Exhibit

If we could attain our ideals there would be nothing left to strive for.

One of the first displays to attract attention at the Dental Manufacturers' Exhibit will be that of the Turner Brass Works, of Chicago. This concern makes gasoline furnaces for crown and bridge-work and several other things of interest to the progressive dentist. The exhibit will be in change of Drs. G. B. and C. H. Stone—both hard ones—to get away from.

The Bannisters' system of Dental Bookkeeping is the most popular one in the field to-day. If you do not already use this system it will pay you to investigate it in the space of The Ransom & Randolph Co., at the Dental Manufacturers' Exhibit.

An eastern graduate of a dental college was asked if his mother-in-law was living yet, to which he replied, "not yet."

A yellow rubber—real yellow—as yellow as an orange peel might not seem very desirable for a rubber plate, but the Traun Rubber Co. are marketing such a rubber and selling lots of it. A plate can be made ot this rubber no thicker than heavy wrapping paper yet strong enough for the purpose. See this rubber at the Dental Manufacturers' Exhibit.

THE DENTAL SUMMARY will be represented at the coming Dental Manufacturers' Exhibit by Dr. Clapp. Leave your subscription to this excellent publication before you leave the Exhibit.

It must be quite an advertising expense for Johnson & Johnson to be so free with their samples at exhibits. Every sample of their excellent specialties should bring a customer and a fast friend. They have samples of several new things this year.

Among the "short cuts" of dentistry is the use of Waxable Rubber. Lee S. Smith & Son will demonstrate this at the Dental Manufacturers' Exhibit.

A fistula or sinus can be cleansed perfectly by first establishing a free opening and then irrigating with Dioxogen. Its bubbling or boiling action helps materially in discharging septic matter. As a deodorant to correct foul breath it has been found very effective; it destroys the cause, not merely disguises the odor. Get a sample at the Dental Manufacturers' Exhibit.

The successful dentist is the one who can do things and knows he can do them and does them.

When a concern offers to furnish a free sample of what it advertises you may rest assured the concern has confidence in the merit of its specialty. The Ransom & Randolph Co. are spending a large amount of money just now advertising and mailing gratuitous samples of OXPARA for curing abscesses to those who have never used it. A ten cent sample does not figure much singly, but 10,000 of them figure $1,000.

The problems of the practical baking of the high-fusing porcelain bodies with gasoline has been solved by Dr. R. C. Brophy in the production of the line of furnaces manufactured by the Chicago Dental Specialty Co. These furnaces will be on display at the Dental Manufacturers' Exhibit.

Anticipating a demand for gold shells for crowns, J. M. Ney & Co. are just placing upon the market a full line of sizes.

The Nelson Gold Tooth Co. will demonstrate the way to use their gold teeth at the Dental Manufacturers' Exhibit. Their display will be an interesting one.

Proper instruments are required for working crystal golds. For this purpose none are better than de Trey's. They are neat, but more useful than neat. Try them at the Dental Manufacturer's Exhibit.

THE DENTAL SUMMARY is the finest dental encyclopedia published.

The seamless gold crown is growing in favor daily and bids fair to come into almost universal use in the near future. The Sharp Seamless Crown Outfit is the most up-to-date, and best-known method of making seamless crowns. It will be demonstrated at the Dental Manufacturers' Exhibit in Philadelphia.

We hear a great deal about men with iron wills, but we wish to observe that in many instances it is a case of pig-iron.

One of the oldest rubber manufacturers is E. Doherty, manufacturer of the well-known Samson Rubber. Mr. Doherty's display will include an exhibition of rubber in its various stages of manufacture.

The exhibit of Johnson & Johnson shows that this firm is taking the same position in the field of Dentistry that they have for years in Surgery, of setting the standard for aseptic absorbent preparations and dressings of guaranteed surgical cleanliness.

Make friends with your creditors but never make creditors of your friends.

Don't fail to get a copy of Ney's latest Gold catalogue, it will be the most attractive sample given away at the Dental Manufacturers' Exhibit.

Dr. Frank Darby has a prominent space at the Dental Manufacturers' Exhibit where he will show his excellent specialties and meet his many friends.

If you would know why a patient wants the saliva ejector used while you are putting in a gold filling, let some one attach the rubber-dam to a molar of yours and leave it there for an hour. If you are not using a fountain spittoon, you will be in the market for a Clark right after the rubber-dam is taken off. See the Clark at the coming Exhibit.

A well-known dentist moved to New York and caught appendicitis. When he lived in Chicago he never aspired to more than chills and fever.

Those who are familiar with the Sharp Seamless Crown Outfit cannot fail to appreciate the vast improvements recently made by the manufacturers, S. Eldred Gilbert Dental Mfg. Co. One of the most notable improvements is the new tooth forms. It will be exhibited at the Dental Manufacturers' Exhibit.

A dentist can learn a lot of useful things by watching Dr. Ivory demonstrate the use of his clamps, separators, etc. The Doctor will be "at home" in space No. 29 at the Dental Manufacturers' Exhibit.

Removable bridge-work appears to be increasing in popularity, and as a consequence The Griswold Dental Bridge Co. is getting more and more prosperous. Dentists who know nothing of this system can get posted by spending a few minutes' time with the Company's clinician at the Dental Manufacturers' Exhibit.

It will probably be a long time before the eastern dentists have another opportunity to see such a display of dental goods as will be shown at the coming Dental Manufacturers' Exhibit. There is already a strong call for a similar exhibit in western cities, Chicago dentists and dealers being the most insistent.

If the dentist using a common spittoon, spent twelve and a half minutes each day cleaning out his spittoon, he would devote sixty-five hours a year to that purpose. Figure his time at $1.00 per hour; in one year, the time spent would pay for a Clark spittoon. You can hear all about the Clark spittoon at the Dental Manufacturers' Exhibit.

The last day of any exhibit is always the most crowded. As all displays must be in order before the opening day of the Exhibit the first day will be the best for those who wish to take their time.

A most economical instrument is the Sharp Adjustable Mouth-Mirror. The first cost is very moderate. New lenses are quite inexpensive, and can be put in the frame in a minute, and the model "A" is adjustable to almost any angle, also laterally, making the mirror adaptable to almost any case.

The Smith-Watson Mfg. Co. have several good electrical specialties that it would pay well to own. The 3,000 dentists who will visit the coming Dental Manufacturers' Exhibit will be interested in their display.

There is a new Vulcanizer in the field—The Cam-Lock. See Clev-Dent Exhibit at the Dental Manufacturers' Exhibit.

Dr. F. C. Brush, of New York City, will give continuous clinics at the Dental Manufacturers' Exhibit to demonstrate the use of the Mason Facing. No one can more clearly demonstrate the advantages of using this facing than Dr. Brush.

You will look a long time before you see a prettier instrument display than that offered by the Cleveland Dental Mfg. Co., at the Dental Manufacturers' Exhibit.

The hustling young concern, the Kerr Dental Mfg. Co., has purchased the business, name and good-will of the Detroit Dental Mfg. Co. The combined specialties of these two will make a fine line. The line will be on display at the Dental Manufacturers' Exhibit, and the dentist who is looking for novel contrivances to aid him in his business had better not put off seeing it till twenty minutes before the doors close.

Some dentists recognize the fact that there is a difference between the man who is well-to-do and the man who is easy to do.

The great demand for Columbia Electric Engines and Lathes made by the Ritter Dental Mfg. Co. has necessitated the building of a new four-story factory. They now have the largest and best equipment in the world for the exclusive manufacture of electric engines and lathes.

The way to get credit is to be punctual, settle often, have short accounts.

The Traun Rubber Co. is about to market a new vulcanite rubber made on entirely new principles. When vulcanized, this rubber shows a most beautiful effect as though gold-dust had been sprinkled on the surface. Visit their space at the Dental Manufacturers' Exhibit and see it.

You can lose more money using cheap goods than you can at a horse-race.

The January number of THE DENTAL SUMMARY was one devoted entirely to Porcelain work. It contains articles from the prominent porcelain workers of America. The SUMMARY is now running a series of articles by college teachers which are highly interesting and instructive.

A good dentist should also be a good business man.

# DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

## SOME CONSIDERATIONS OF PYORRHEA ALVEOLARIS (SO-CALLED).

BY L. L. DUNBAR, D. D. S., SAN FRANCISCO, CAL.

Emeritus Professor of Operative Dentistry and Dental Histology, Dental Department, University of California.

It seems curious that during all the years that have elapsed since Dr. Riggs, of Hartford, Conn., first made public his treatment of that peculiar oral manifestation called by practitioners of the early seventies, "Riggs' disease," we are no nearer a solution of the problem then presented, than would appear from the published reports of this disease at the present time.

Hardly a journal among the many issued monthly but contains some original paper or society report giving a theory of its origin, or some specific method of treatment, while these all differ in their various features, often widely, and the writers of each claim equal success in their line of treatment, all agreeing upon one thing, viz.: the recurrent tendency of the disorder.

A most attractive field for speculation and investigation is here offered the young practitioner, in that this condition is still numbered among the unsolved problems of dental practise. That it is of systemic origin there can be no sort of doubt, whether due to malnutrition, imperfect elimination, or neuroses, alone or combined, has not been determined; whether the blood or other vital fluids be acid or not, or whether this condition is necessary for the production of the phenomena recognized. Or is it of tuberculous, catarrhal, or calcic origin?

## THE CALCIC THEORY.

Every theory has its advocates with the major leaning to the side of its origin from the irritation of calcific deposits.

In spite of the fact that the fallacy of this has been repeatedly shown, the calcic theory still obtains a large support. This is unfortunate, for besides being unscientific, it supplies an argument for the claims of a number of practitioners who have adopted the questionable practise of magnifying the prevalent calcic manifestation into a terrifying "incipient pyorrhea" for business purposes, and through this acquire a reputation among the laity as specialists in this branch of practise. A very trifling calcic gingivitis thus presents a large possibility as a source of revenue.

It is to be regretted that the professional body tolerates such unethical practises and the consequent degradation of our professional ideals, because in spite of some honest supporters of the calcic theory, the profession always recognizes the true status of him who dogmatically declares that *he only* knows the true origin of the disease, and confidently announces his successes in the treatment of pyorrhea at society meetings, accompanying his statement with an exhibition of teeth he has (not) saved. His unsupported word must be taken for those he has successfully treated, probably eighty per cent of which were a mild calcic gingivitis.

Don't understand me to say that calcic gingivitis is unimportant, for although it is an accompaniment in greater or less degree to nearly all calcic deposits, and usually of no serious import, it is still an inflammation of mucous tissue, and as such is liable to great extension under favoring conditions, such as neglect of ordinary hygienic precautions or bacterial infections; indeed, acute attacks of gingivitis are by no means rare, and their presentation in any of their various actively inflamed forms, to one of these before-mentioned specialists, would put him to his wits' end to diagnose and treat, or indeed, to differentiate from pericementitis or alveolar abscess, or any of the phenomena of alveolar pyorrhea. No practitioner should fail to observe every oral inflammation closely, and to record and compare their various manifestations, for these differ widely, no two cases being exactly alike in every particular.

### PERPLEXING CASES.

The most perplexing cases are those in which there is pronounced alveolar absorption, as shown by marked loosening of the tooth involved, but with closely adherent gum at the gingivæ, no pain and only a slight elongation.

There is never any calcic deposit in such cases, and little if any pus, the tooth seeming to be retained principally by a fleshy attachment which must be broken up before treatment can be inaugurated. Such a tooth upon examination discloses an absence of pericementum over the larger area of root, and an absorption of the alveolar tissue both bony and membraneous, not, however, involving the tooth-socket at the apex.

A peculiar feature in such a manifestation is that it is usually presented in mouths perfectly free from calcic deposits and where the teeth receive more than ordinary good care.

You will observe from the foregoing description that such a case differs materially from those in which there is acute pain in the gums, accompanied by redness, swelling, and the exudation of a quantity of pus from the tooth-sockets which are open at the gingivæ, there is also pericementitis with consequent elongation and soreness of the tooth involved.

While the mucous membrane in the former case is apparently normal, of good color, and free from inflammation, in the latter presentation the mucous tissue is anemic, pale, and flabby looking throughout the mouth, with more or less acute inflammatory areas involving one or more scattered teeth. Throughout the progress of the disease this localized inflammation arises and abates at intervals in one or other of the infected sockets, sometimes limited to but one, and sometimes involving all the affected teeth, the severity of the inflammation being governed only by the extent of the absorption in each. It is usual to find some evidences of calcific deposit in cases of this character, appearing as a primary deposit immediately under the free margins of the gums and also as the serumal deposit at a later stage. The presence of both characters of calcic deposit can be accounted for, in that lime salts are deposited by the mucus and saliva, as well as by the circulating fluids of the fibrous pericementum.

What the latter tissue will do in this direction under the stimulus of inflammation, before it finally succumbs, has never been determined, but it is fair to assume that neither the mucus nor saliva can possibly furnish the stain that is characteristic of serumal or sanguinary calculus. That ordinary salivary, or mucus deposits should occur in open pockets is to be expected without ascribing to them the importance of being factors in the production of the disease.

### CURIOUS FEATURES.

One curious feature in regard to this manifestation is that all the severity of such an attack as the one just described may and does occur in mouths that have been scrupulously cared for and where no primary deposits of tartar have ever been observed, and more curious still, the entire process of absorption of socket membranes and pericementum with periodical inflammations up to the exfoliation of the affected tooth has occurred without any character of calcic deposit being manifested as a result of the inflammatory process or of the open pockets offered as a convenient place of deposit.

In these cases, which might be described as another manifestation of pyorrhea, the absorption of socket membranes is apparently slower, there is the same periodical pericemental inflammation, and that of other membraneous tissue, which breaks down gradually, but the intervals of quiet extend over a longer period and the inflammatory attacks are less acute.

During all this period of alternate inflammation and rest there is only a sense of disquiet to which the patient soon becomes inured and tolerates without complaint the slight inconvenience in mastication.

The gingivæ usually present no signs of the process of destruction, and are more or less closely adherent to the necks of the affected teeth; pus only exudes in small quantity on pressure, the acute stage being ushered in only when the absorption of peridental membrane has involved the apex, and alveolar abscess occurs.

This is a well-known chronic form of pyorrhea, difficult to diagnose and equally difficult to treat, because it is not brought to the notice of the practitioner until the final stage has been reached, when the history given and the appearance of the tooth and surrounding tissues is altogether misleading.

I have heard old practitioners say that all pyorrhea originated in calcic irritation, beginning at the gingivæ, and that no case of so-called pyorrhea "was known in their practise among clients who had been under their continued care. That they would consider themselves to blame if such manifestations occurred in a mouth under their control."

Their sovereign prophylaxis being scrupulous care of the teeth and the recognition and removal of every nodule of salivary calculus. How this plan would meet cases like that first described, where the normal tonicity of the gums was unimpaired and no tartar present, I fail to perceive.

In the last described manifestations, also without tartar, but with periods of acute pain alternating with long periods of rest, with an impaired tonicity of mucous tissue during the whole course of the disease, I find myself wondering if to the intelligent dentist, constantly observing the mouth, some suggestion of systemic impairment did not occur, particularly when local hygienic efforts failed to give relief and arrest the disease process.

In the light of present knowledge, which is far from conclusive, no practitioner is justified in saying to a sufferer, "Nothing can be done for this condition; it will only be a question of time when you will loose all your teeth."

If he has a personal bias or prejudice against the methods of treatment proposed, or a disbelief in their efficacy, he should honestly say so and then refer the sufferer to some practitioner with more professional enthusiasm, which act may be the means of his own enlightenment.

### DIFFERENT MANIFESTATIONS.

If you have followed me closely in the foregoing description of typical presentations of this disorder, you will have noticed that there is a marked difference in its manifestations, and will not wonder that the disease has as yet received no fixed name, but has been variously written about as pyorrhea alveolitis, phagedenic pericementitis, chronic alveolitis, idiopathic alveolitis, intestitial gingivitis, etc. Almost every writer has his own name for the disorder, and this is expressive of its locality and some prominent pathogenic feature.

Perhaps the commonest inflammation appearing in the oral cavity is that known as gingivitis. Hardly an individual mouth but exhibits some form of its manifestation, which is largely due to neglect of ordinary hygienic precautions.

Where there is a predisposition to calcic deposits, the inflammation of the gingival border is augmented until quite a zone of inflamed tissue is developed, accompanied by occasional hemorrhages from the festoons of gum tissue in the bicuspid region and from the gums about the lower incisors.

This hemorrhage always interferes with the proper use of the tooth brush, and thus facilitates the spread of the disease. Occasional hypertrophies of the tissue are also an accompaniment of the disorder at this stage.

It is not usual for patients to complain of much pain except in brushing or in the mastication of hard foods, such as crisp crusts of bread or the like.

There is, however, a form of infective gingivitis that is quite painful, so much so that the patient complains of inability to eat any kind of food, and the pain is often severe enough to interfere with normal rest. Such cases may be confined to one region of the mouth, or indeed, in its severest form to one tooth, with considerable swelling and pericementitis, which to one unaccustomed to a differential diagnosis would in all its features resemble acute alveolar abscess.

## TREATMENT.

The treatment for the first described is of the simplest character, viz.: a thorough removal of the calcic deposit and cleansing of the teeth, being careful to avoid the use of push instruments, from danger of carrying infection to the peridental membrane, as the calcic deposit is directly under the free margins of the gums, contiguous to the openings of the mucous follicles. A delicate draw-cut instrument will remove the deposit with the least possible injury to the soft tissues. After cleansing, a mild cautery can be used on the hemorrhagic tissue and the case dismissed with proper instructions about brushing.

There are several medicinal cauteries that are very effective, the best and most reliable of which is the following:

℞ Carbolic acid crystals,
Caustic potass crystals, aa,
with water qs. to solve.

This form of a well-known remedy permits its use in a thumb-syringe by means of which a drop can be inserted under the gum or beneath the hypertrophied tissue, taking the precaution to protect the tongue with a roll of cotton and also place a smaller roll between the lip and teeth, holding in place firmly with the first and second fingers of the left hand, have all the parts of the syringe well-fitted and tight so that the cauterizing agent will be kept from the lips, tongue, or oral mucous membrane.

From ten per cent to full strength trichloracetic acid is also a good cauterant, but this agent in its strongest form must be used with great caution.

A mild astringent wash is a good expedient to hasten cure. I have rarely found it necessary to cauterize more than once except in removal of a large hypertrophic growth, when the repeated application of trichloracetic acid in crystal form is the best medication.

## OTHER FORMS THAN TRUE PYORRHEA.

The forms of gingivitis above given, omitting the hypertrophies perhaps, are those our so-called pyorrhea specialists treat as "incipient pyorrhea" with great success, although more than two-thirds are amenable to careful scaling and subsequent use of an astringent wash. A little technical information on the part of the patient magnifies the disorder so that he becomes a willing victim and enthusiastic tout for the enterprising practitioner.

These cases, I repeat again, are not pyorrhea, in spite of every stomatological assertion to the contrary.

### LOCAL TREATMENT.

The local treatment of the various manifestations first described in this paper is conducted upon the same lines as has been described for gingivitis, in which a cauterant, antiseptic, and astringent to follow the surgical operation, will be all the local medication required.

I use but two principal forms of instrument for any surgical procedure necessary, these are the delicate draw-cut form in two or three angles as indicated, and two or three long but delicate knife-like instruments for paring the edges of the necrosed alveolar process. A mitigation of pain is to be obtained by passing into the pocket little wisps of cotton carrying oleate of cocaine or by injecting Eucaine B, five or ten per cent solution, just prior to using the knife or scraper. When this instrumentation is accomplished in a satisfactory manner, rinse with warm antiseptic solution and carefully apply the carbolized potash solution as described.

The habits and dietary of the patient are to be inquired into and corrected if necessary.

A conference with the family physician is sometimes of great advantage, particularly if malnutrition or malassimilation is suspected, and last of all, though of most importance, secure a proper elimination of waste products from the economy.

Neuroses will be found to be a fruitful source of disturbance of connective tissue relations, and probably through the domain of the connective tissues circulation will come the most important knowledge we shall acquire of the origin of this mysterious malady.

### OTHER FORMS.

I have purposely refrained from discussing the tuberculous phase or the catarrhal origin of this disease; first, because I have never seen a tubercular manifestation in the mouth and cannot conceive of the tubercular bacillus attacking the fibrous connective tissues of the socket of a tooth without also affecting the mucous membrane in such manner as to remain a permanent infection after loss of the tooth.

As this has never occurred clinically, I am forced to eliminate tubercular infection from any consideration in this connection. As to a catarrhal origin, this is perhaps the most likely, but this, too, is undetermined, and as catarrh is a disease of the mucous tissue, infection from this source would hardly subside upon exfoliation of an infected tooth, as we know this disease to do. We are forced, therefore, to consider true pyorrhea as an infection of the fibrous connective tissues of the socket due to some unknown cause and wait for more light.

# MODEL ALTERATIONS.

BY E. M. KETTIG, M. D., D. D. S., LOUISVILLE, KY.

Professor of Prosthetic Dentistry and Crown and Bridge-work,
Louisville College of Dentistry.

It is not the intention of the author of this paper to bring out any new points in this most important step in the construction of artificial dentures, but merely to again call attention to certain facts, that if neglected in even the most perfect models, may seriously affect the proper fit of the plate; while, if properly understood and carried out, they will not only make perfect models. produce better fitting plates, but in many cases imperfect models can be so altered as to produce plates that will give good service. As I said before, attention has been drawn to model alterations before, but good things cannot be repeated too often, especially when so few dentists pay much attention to detail in plate construction, and then become discouraged at the poor success of their efforts in mechanical dentistry. I have rarely seen a model, no matter how perfect a reproduction of the mouth, that did not need some change so as to give the plate constructed over it better stability in the mouth. Lower models, when made from good impressions, should not be altered much, as the ridge is narrow and the pressure great, and any change in contact of plate with gums will manifest itself in bearing unduly hard at one place or another. It is in upper models, both partial and full, that alterations are permissible and necessary, especially in full cases in the majority of mouths.

### METHOD OF PROCEDURE.

The man who alters a model for a full upper case must be thoroughly familiar with conditions in the mouth; it cannot be entrusted to a laboratory assistant. First, an impression should be taken with the greatest of care, and in the majority of cases with plaster, then a separating media used that will be exceedingly thin so as not to obliterate any of the fine lines of the impression. Every ruga, fissure, convolution of mucous membrane or uneven surface must be accurately produced and preserved, so that the model will be what is ordinarily understood as perfect. Next, it is the best plan to have the patient in the chair, and having the model in one hand, we examine the mouth with the other and make comparisons. If the mouth is uniformly hard, few alterations are necessary, except at the posterior limit line of plate on each side of the median line at the palato-alveolar juncture. Here the scraping should be on the model to the depth of one-twelfth of an inch, beveling out in all directions less until lost from the focal point. In models of this kind no other change should be made, and as a rule, no air-chamber added. If the mouth is not uniformly hard, but inclined to hard and soft places, much judgment is necessary, for if we do not make provision for the contact of the plate in these unequal parts of the mouth, our plate will surely not give the best results. With patient in chair and model in hand, we must by examination of the mouth mark with lead pencil on the model the areas that need scraping. I believe a properly constructed air-chamber will add much to the stability of the plate, but one that is so made as to allow the gums or mucous membrane to cup into it and entirely fill the space is *not* properly constructed, and when we see a patient with the imprint of an air-chamber well defined in the roof of the mouth and the tissue cupped down, we know the air-chamber was faultily built in that case, and of no use. It should be shaped the same general form of the model, placed in the highest part of the arch, with an equi-distant space between it and the top of ridge and posterior limit line of plate. Its edge should be beveled slightly and not too sharp. After securing in position, a groove should be cut in plaster all around the edge of the air-chamber, except its anterior surface. There should be no groove here on account of the liability of infringement upon the naso-palatine nerve, which passes from its foramen just at about this point and may suffer paralysis or distant neuralgia, such as headache, if the plate rides unduly upon it. This groove about the air-chamber should be about one-twelfth of an inch deep and about the same distance from the edge of the cavity. This groove forms a ridge on thefinished plate which not only answers the purpose of checking the ingress of air that may slip in from the margins of the plate, but holds in check the mucous surfaces from cupping into the cavity due to atmospheric pressure from without continually exerted upon this focal point. Having arranged the air-chamber, the soft places are to be scraped, and if properly done, the hard places will take care of themselves. The softest places are out on each side of the median line at the palato-alveolar juncture of the palate bone. Digital examination here of the mouth will reveal quite a soft spot on either side. These should be scraped to the depth of a line beveling in all directions until lost, except posterior, where it should be increased.

## GROOVING THE MODEL.

Then if the mouth is one that has much hard and soft surface, a groove should be trimmed a line in depth all around the model half way between the top of the ridge and rim of plate laterally and continued over the heels and between posterior edge of air-chamber and limit line of plate. This makes an air-chamber within an air-chamber, and if properly made adds much to success in difficult cases.

### USE OF MODELLING COMPOUND.

In very soft mouths where the ridge is very soft and mucus membrane abundant, I don't think much of plaster in taking impressions, but prefer modelling compound. My method is to secure the best possible impression with compound, then trim out a uniform layer of its surface inside the impression after it has set, then spreading a thin layer of warm compound uniformly over it and taking a second impression. This not only gives uniform pressure on all parts of the mouth, but the compressibility of the soft gum tissue should be taken advantage of with the pressure necessary in the second addition of the compound, as much force is necessary to properly mold the material over the parts. This cannot be done with plaster, and while plaster is in all other cases the material par excellence, in these extremely soft mouths it is contraindicated, and better results can be obtained with compound.

## "CLEANING THE TEETH."

BY ALTON HOWARD THOMPSON, D. D. S., TOPEKA, KAN.

Emeritus Professor of Dental Anatomy, Kansas City Dental College.

The simple operation of "cleaning the teeth," as it is popularly designated, is one of such importance to the clientele of the dentist that it is a constant source of wonder and regret that it is usually so indifferently performed. Very few practitioners, even of those who are conscientiously painstaking and thorough in regard to other more difficult and elaborate operations, seldom give this simple operation the attention and thoroughness which its importance demands. It is usually shirked because it is more or less disagreeable and the time required does not yield the compensation that it would in filling or more lucrative operations. Both of these excuses are ignoble and unworthy of the high character that should animate the practitioners of our noble calling.

We always urge thorough and painstaking care of the teeth on the part of the patient, and to that end we should first prepare the teeth and mouth so that the patient may successfully carry out our directions. The brush will not remove calculus nor deep seated stain nor roughness of the enamel, and if we fail in our part by not reducing those conditions first, the patient cannot be expected to do his part afterwards. Therefore, the first step, the first duty of the dentist to his patient, is the thorough cleansing of the teeth.

The first step in the operation of cleansing the teeth by the dentist is the removal of the salivary calculus deposits upon the crowns and necks of the teeth, and which sometimes extend some distance beneath the gums. Tumid and irritable conditions of gingival margins and numerous reflex painful affections are directly due to the irritation of calculus deposits, which are often relieved at once by their thorough surgical removal. Besides the many direct and reflex effects of the deposits which induce suffering there is the further consideration of filth, resorption of the gums, infection inducing pyorrhea and caries, pollution of the oral fluids and the effect upon the general health through the lungs or stomach. These and other considerations call for the thorough removal of all deposits of salivary calculus, and the neglect of this duty makes the dentist all the more culpable.

## REMOVAL OF CALCULUS.

Calculus must be removed by properly-shaped instruments and the proper manipulation, for the operation is a mechanco-surgical procedure. Many kinds of scalers have been devised, and in no branch of our armamentarium have so great a variety of instruments been invented. This variety bears witness to the variety of ideas that prevail as to how scalers should be shaped, and as to how the calculus should be removed. Without taking time to criticize the various instruments that have been invented, the writer will briefly submit his own ideas in regard to instruments and him method of operating—which he believes to be the best—and which will probably add to the confusion already existing.

The writer believes that calculus is best removed by chisels with the mallet. This method of procedure is, he believes, more effective than the scaling process, is easier for the patient, and is less injurious to the gum and the periosteum. The chisels should be of a few simple forms, as follows: (1), straight, short and stout for buccal surfaces; (2), straight and long, stout and slender, both for lingual surfaces; (3), long, curved and slender for proximate surfaces, and (4), right-angled cross blades, both stout and slender, for distal surfaces, especially of third molars. These few shapes will cover all ordinary requirements. They should be used with the heavy lead mallet held in the left hand, with a light blow. The ease and effectiveness in removing the deposits will be surprising. Of course, in very bad cases more than one sitting will be required to remove all of the calculus, and time for the healing of the gums should be allowed between sittings.

### ROUGH POLISHING.

The next important step is the rough polishing of the crown to remove fragments of calculus, deep-seated stain, superficial caries and irregularities of the enamel. Also the smoothing of sharp edges, reducing irregularities of height, and correcting articulation where teeth by raising from the socket have produced malocclusion, etc. This is accomplished with corborundum and gem-stones. It is most important to reduce the rough enamel of the buccal faces, due to corrugations, superficial caries and softenings, etc. The worn and sharp edges of the teeth of old persons—especially of tobacco chewers—should be well smoothed, for the laceration of the tongue and cheeks caused by ragged teeth is dangerous, being liable to cause irritations which might become the seat of carcinomatous growths. This should never be neglected. The reducing of teeth of unequal height, such as prominent lower incisors, is important for appearance sake. This rough polishing and reduction is, therefore, very necessary.

### FINE POLISHING.

The finer polishing is the part of the operation that is ordinarily done without attending much to the preceding stages;

*i. e.*, the thorough removal of calculus and the rough polishing. The finer polishing can be accomplished very readily with the rubber caps and engine brushes with dioxygen and pumice. This stage of the operation is very simple, but it is necessary to restore the natural color of the teeth and to put them in condition for the personal care of the patient.

The entire operation of the cleansing of the teeth is important, and each stage should be well performed in order that the patient may have all the benefits to be expected from it. It cannot be done slightingly and carelessly and expect good results to follow, any more than any other operation.

# REGULAR CONTRIBUTIONS

## A CASE OF COCAINE POISONING.*

### BY T. B. JOHNSON, D. D. S., CLEVELAND, OHIO.

Cocaine is a drug which I have always used sparingly and with caution, and have borne in mind the results which might occur should the patient be particularly susceptible to the drug. To guard against any possible complications I have always had a number of remedies for cocaine poisoning in a convenient place, available for instant use.

For extracting teeth I seldom use stronger than one per cent solution, and never over two per cent.

The case of poisoning which I wish to report, however, did not come from a hypodermic injection, but from cocaine pumped through the end of a root into the apical space. A brief history of the case is as follows:

I had removed the pulp of a right superior lateral incisor, by the pressure method, a day or two previous, and expected to fill the canal on the day in question.

The rubber dam was thoroughly in place with ligatures around the teeth. On removing the dressing previously inserted, I found a small filament of nerve near the apical end of root, which I had failed to remove at the first sitting. To anesthetize it I pumped cocaine into the canal by moistening a broach in water and dipping it in the powdered cocaine. The desired anesthesia had been obtained and the filament removed, when I was startled by the distress of my patient, who showed the preliminary symptoms of a bad case of cocaine poisoning. The first sensation was a queer feeling, followed by faintness. The pupils of the eyes were very much dilated.

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*Read before the Cleveland City Dental Society.

The head was immediately lowered and nitrite of amyl held to the nostrils. The canal was washed out with water before removing the rubber dam. There was no apparent improvement from the nitrite of amyl, and some brandy and shortly afterward nitro-glycerine was given internally, with no perceptible effect. The heart's action was becoming weaker and intermittent. A hypodermic injection of brandy was used with some result, as the heart's action became better, but shortly returned to the former condition, and the respiration was becoming slow and not deep.

I was preparing a fiftieth grain dose of strychnine sulphate for injection, when a physician, who had been summoned, arrived, and at his suggestion the dose was increased to a twenty-fifth grain, which was injected with satisfactory results, the pulse and respiration gradually becoming stronger.

The respiration had at different stages been assisted artificially, and the clothing was loosened where it in any way interfered with the breathing.

It was at least two hours before the patient was able to leave the office.

As regards the quantity of cocaine used it will be impossible to determine the exact amount, but from calculations made since, it certainly was a very small quantity. I had placed on a slab a small crystal which couldn't have weighed over one-fourth of a grain, and powdered it.

After the excitement was over the amount of powder still remaining was about three-fourths of the original amount. After making allowances for the amount wasted in carrying to the tooth and the quantity which would cling to the sides of the canal, I do not believe it possible to have forced over one-thirty-second of a grain into the tissues, and in my own mind I do not believe that over half the latter amount was actually absorbed.

As to the poisonous dose of cocaine, according to the American Year Book of Medicine and Surgery for 1902, the smallest fatal does on record from a hypodermic injection was one-third of a grain, and the same authority says that sixty grains per day has been tolerated by those who have formed the cocaine habit.

According to Cushing's Pharmacology, not over three grains should be injected sub-cutaneously. Personally, I believe Dr. Van Dorn's statement that "no man knows what the safe dose is," and that the idiosyncrasy of the patient has everything to do with the effect produced.

A description of the patient may not be amiss in this connection:

She was a married young woman about twenty-five years old, and had a young nursing baby. Her health was rather poor at the time, not having entirely recovered from her confinement. She was of a sanguinous temperament and somewhat anemic. One of the kind you expect to faint on slight provocation. Previous to the experience just related I had never considered cocaine dangerous when used in the way described, but since then I have handled it the way one should handle a gun which he knows is not loaded, on the principle that it might "go off" anyway.

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# A DENTAL PULP DEVITALIZER.

BY DR. W. J. KEYES, MARYSVILLE, OHIO.

A devitalizing preparation which entirely obviates the danger of arsenical poison, is as follows:

Arsenious acid.
Cocaine.
Morphine.
Charcoal.
Glycerine. *aa*

This is a preparation which I have used for three years with the greatest satisfaction. After obtaining a fairly good exposure a small amount of the paste is placed in it, (where it will remain), and is sealed with temporary stopping. The devitalization will be painless, although there may be a slight itching of from four to six hours occasionally. The result will be accomplished in from twenty-four to thirty-six hours.

# A NEW FORM OF ENGINE MALLET.*

BY ALDEN BUSH, D. D. S., COLUMBUS, O.

This mallet is made with a slip joint and can be attached in place of the hand-piece to nearly all of the dental engines in use. It is, however, better adapted to one of the "electric engines," because of the greater freedom of action and also relieving the operator from treading the engine, and thus enabling him to give his undivided attention to the operation.

This mallet has many features distinctively its own, paramount among which is its blow—a light, sharp, "hand mallet blow," which does not depend entirely upon rapidity for its condensing force. Each blow is as reliable in its welding quality as is the old and reliable hand mallet, hence when starting a filling, or while working over the most frail enamel margin, this mallet run at its slowest speed may be used with impunity.

And like the hand mallet the blow is struck after the gold has been carefully placed and the plugger point put in the proper position, yet by changing the style of operating the continuous blow may be obtained.

All the engine mallets now on the market depend entirely upon a high rate of speed for their condensing powers.

The strictly *rapid mallets* have their greatest usefulness as *builders* and are practically limited to this use.

The slow blow of this mallet is most effectively obtained in connection with the electric engine which has a very desirable slow speed, although the ordinary foot engine may be employed in this capacity. The hammer is spring-actuated and is sufficient in weight to condense gold when given the proper velocity. The spring is employed solely for the purpose of imparting velocity to the hammer, which in turn is dependent upon the degree of tension given the spring.

The feature which perhaps is the most unique one embodied in the mallet is the ingenious provision for holding the plugger points.

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*Demonstrated at Ohio State Dental Society, December, 1902.

Each plugger point is provided with a separate handle which is received by the nose piece of the mallet and firmly locked or quickly released, thus greatly facilitating the change of points when desirable. The nose piece or finger piece is swiveled to the mallet, which is advantageous when working with a foot plugger, it being often desirable to rotate the point.

Briefly, the features of this mallet, as pointed out in the demonstration, are:

I. A self-locking device for regulating the tension of hammer spring.

II. A swiveled nose or finger piece whereby the plugger point may be rotated.

III. A mechanism by which the change of plugger points may be quickly accomplished.

IV. A hammer in combination with other working parts which approximates the hand mallet.

## ANESTHESIA OF SENSITIVE DENTIN WITH CATAPHORESIS.*

BY WESTON A. PRICE, D. D. S., M. D., CLEVELAND, OHIO.

Patient, Mr. A. E. Caron, a senior dental student, O. M. U. The teeth were all filled with cement or open cavities, because they were so extremely sensitive that they could not be excavated, though the patient had tried repeatedly to have it done.

The first cavity opened was a mesial in the first bicuspid, easily seen. It had been refilled with cement repeatedly, and while quite sensitive, was rejected and an open cavity was found on the mesial surface of the molar, that was so extremely sensitive that when touched lightly with an excavator, the patient nearly slid out of the chair, and the perspiration stood out on his forehead in beads. This was considered an ideal case. The rubber cloth was applied with great difficulty, because the molar and bicuspid were so much decayed on their proximal surfaces that they touched tightly at their cervical margins, and the passage of a silk floss gave considerable pain on the sensitive cervical margin of the cavity, and the patient could not allow of the passage of a thin separating saw or file, so the rubber was fixed on by crowding the teeth apart slightly. Since the insulation was difficult because of the impossibility of getting any liquid insulation like chloro-percha between the teeth, it became necessary to pack the entire cavity, after drying carefully, but thoroughly with gutta-percha, in order to be sure we had perfectly insulated the cavity at the cervical margin. Of course, this completely insulated the cavity walls also, and the gutta-percha was crowded away from the wall of the cavity toward the pulp, and the application was thus made to a small area as close to the pulp as possible.

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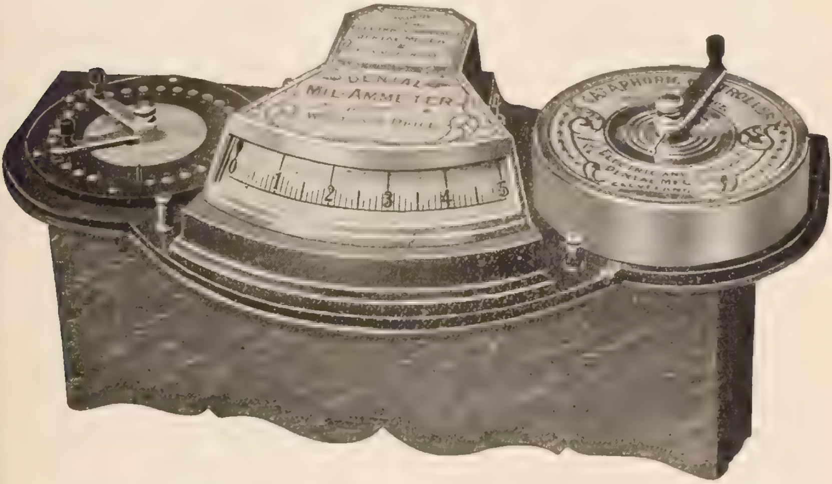
*Given as a Clinic at Ohio State Dental Society, December, 1902.



The medicant used was hydrochlorate of cocaine, a saturated fresh solution in distilled water. The current was applied and at the commencement of the application the point of first sensation was three-one hundred thousandths of an ampere. The voltage was increased one cell at a time, but each time all the resistance was turned in before adding the next cell. In sixteen minutes the tooth tolerated forty-one hundred thousandths of an ampere, or four-tenths of a milliampere, the limit we should use unless we expected to remove the pulp. At this time the application was removed and a disinterested party asked to prepare the cavity.

The gutta-percha was removed and the cavity prepared without any sensation whatever, except after a time at the cervical margin where it had been completely covered with the gutta-percha. A second application was made for two or three minutes and no trace of sensitiveness could be found. To test the efficiency, the cavity was extended backward into the central fissure, forming a seat. The bur was allowed to get as hot as possible, and no sensation could be felt.

Owing to a scarcity of dental engines, the one used had to be used in another clinic. The patient insisted that we open up the defective distal fissure before removing the rubber, and it was just thirty minutes after the current was removed, that we were able to secure the dental engine again to do so.

Usually the sensitiveness would return in that length of time, but in this case, as in many cases, it had not, and the fissure was excavated deep into the dentin without sensitiveness. The patient afterwards expressed the operation as being entirely free from pain from the time the current was applied, and the sensation from which he signified when there was sufficient current turned on, was not at any time pain, but like a mild warm or cold sensation in the tooth, and the current could be increased much beyond this point before he felt pain, and then never the least shock, but like a more intense heat or cold. He said he considered the application a perfect success, and would never have a sensitive cavity prepared again without it.

Many important questions were asked. Some were:

Why use fine platinum wire for the electrode? Because the chlorid would be formed if silver, copper or brass were used, which salt would carry the current and its metal would be carried into the tooth instead of the alkaloid of cocaine.

Why so much pains in insulating? Because without it the current would have gone to the gum instead through the tooth to the pulp.

Would a cavity be anesthetized more quickly if a large surface is exposed than a small one? That depends upon whether the entire cavity is to be anesthetized by anesthetizing the pulp and thus the whole tooth, or by local anesthesia in the cavity. In this case we used the former method and in such a case as this it would always be more rapid by anesthetizing the pulp through a small surface of the floor or wall of the cavity than to use the entire surface. This fact seems never to have been appreciated.

## A CASE IN PRACTICE.

BY T. C. REID, D. D. S., PRAIRIE DEPOT, OHIO.

Mr. B., age 35 years, called at my office to have a superior first molar examined, it having been giving him trouble. An examination showed the tooth to be perfectly sound, but extremely sore, giving every indication of pericementitis.

I decided to open into the pulp-chamber and in so doing found eight or ten pulp-stones and many nerve fibres still partially alive.

Removing the pulp-stones and nerve, I treated with a sedative treatment for three days, and then filled in the usual manner. The patient has experienced no trouble since.

I think one cannot be too careful in his diagnosis of dental troubles.

## AN ELECTRIC HEATER FOR REDUCING HYPEREMIC CONDITIONS.*

BY H. J. BOSART, SPRINGFIELD, OHIO.

The instrument I have here is an electrical heater, so constructed that it may be held in the hand against the face where-ever needed to reduce hyperemic conditions of the pulp or pericementitis, it being much more effective than the hot-salt bag or other hot applications so often used.

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*Demonstrated at Ohio State Dental Society, December, 1902.

A greater degree of heat produced by electrical energy can be borne by the tissues without blistering than by heat generated by direct combustion. The effect upon the tissues is to relax the capillaries and blood vessels, producing an uninterrupted flow of blood through the parts, re-establishing circulation.

## ADMINISTRATION OF NITROUS OXIDE AND OXYGEN—ADMINISTRATION OF NITROUS OXIDE THROUGH THE NOSE.*

BY DR. C. K. TETER, UPPER SANDUSKY, O.

The apparatus used was an invention of the writer for administering nitrous oxide and oxygen. It consists of a standard, with neatly folding legs, which supports the mechanism, by which three cylinders are attached Two of nitrous oxide and one of oxygen. These gases are let into separate bags, from which they pass to the mixing chamber, which is supported on top of the extended arms, in easy reach of the operator. This mixing chamber has two valves, one in each tube, leading to the nitrous oxide and oxygen bags. These valves are rotary valves and so constructed that the smallest increment and decrement of oxygen can be given. There is a dial and indicator attached to the oxygen valve, by which the exact per cent of oxygen is regulated. The gas passes from this mixing chamber to the inhalers.

A face inhaler, and a nasal inhaler are used with the apparatus. The first patient in the clinic was anesthetized by the use of the nasal inhaler. The inhaler was placed in position over the nose, mouth prop inserted and the gas gradually turned on, the patient breathing through the nose for about 40 seconds, the mouth being open also up to this time, but at this stage a small rubber was placed over the mouth to exclude all air, and the patient was allowed to breathe the pure nitrous oxide for six or seven inhalations, when he passed into deep and satisfactory anesthesia. Three teeth were painlessly removed. As soon as the inhaler was removed the patient regained consciousness marvelously quick.

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*Given as a clinic at Ohio State Dental Society, December, 1902.

The length of the inhalation was about 65 seconds, and the length or duration of the anesthesia was about one minute.

The second patient, Mr G——, age 28, with athletic physique, was anesthetized by the use of the face inhaler; nitrous oxide and oxygen being administered. This clinic was for the sole purpose of demonstrating the anesthetic and the symptoms involved. The patient was put in a perfectly comfortable posture (the mouth prop was not used in this case), the face piece was applied, and air was breathed through the apparatus for a few inhalations, when nitrous oxide was gradually admitted, and the air was entirely shut off. The patient was requested to take long and deep breaths through the mouth. The indicator on the oxygen valve was turned to 2, which admitted a 2 per cent. of that gas. Four or five inhalations were taken of this mixture, when the indicator was turned to 4, and a little later it was turned to 6, where it remained until the patient passed into a deep stage of anesthesia, which lasted after the face-piece was removed, almost two minutes

The anesthesia was characterized by softly snoring breathing, the color was very near the normal. He had a good pulse, the eyelids were relaxed, and there was no rigidity of the extremities, as is so common when nitrous oxide alone is administered. The patient said that there was no feeling of suffocation or any discomfort. The anesthesia produced was pleasing to look upon, and was satisfactory in every way.

The third clinic was given to demonstrate the use of the apparatus for preparing sensitive cavities, and removing nerves. The rubber dam was placed in position over the teeth, completely covering the mouth, and the nasal inhaler was put in position, and the patient allowed to breathe a 3 per cent mixture until he was in a semiconscious condition, at which stage a cavity was prepared for a gold filling. The cavity was so sensitive the day before when an effort was made to prepare it, he fainted from the intense pain that was produced. The patient claimed that there was no sensation of pain experienced whatever. The patient was kept in this state of semiconsciousness for about five or six minutes. This was accomplished by allowing him to breathe the air through the mouth until he began to feel unpleasantness from the operation, when he did so, he was instructed to breathe the gas again for four or five inhalations, when he quickly passed back into a semiconscious state. This can be prolonged indefinitely, and it surely is a blessing to the patient.

## PROSTHETIC APPLIANCES.*

### E. S. FULLER, D. D. S., PIQUA, OHIO.

This clinic was a demonstration of a full upper and lower set of teeth articulated by the Bonwill method. The value of an articulator which provides for lateral motion.

Bonwill's method of making an upper, partial, skeleton, gold plate, the plate being trimmed away from the remaining natural teeth to prevent contact.

Bonwill's method of clasping was illustrated by a lower model supplied with two removable bridges, which showed that the point of attachment of the clasp to the plate or bridge should always be on that surface of the tooth offering the least resistance to a downward pressure, thus permitting the clasps to spring over the bulging or overhanging portion of the tooth.

Also a partial lower gold plate supplying the posterior teeth. The plate being cut away lingually to prevent friction on the remaining natural teeth.

Plates should extend to the full height obtained by a properly taken plaster impression, except at the frenum, where it should be cut down slightly, and that the edges of plates should be made thick and rounded to prevent irritation of the soft tissues.

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*Clinic at Ohio State Dental Society, December, 1902.

# PRESIDENT'S ADDRESS.*

### BY OTTO ARNOLD, D. D. S., COLUMBUS, O.

I ask your indulgence for a short time, while I endeavor to fulfill the duties devolving upon the presiding officer of this body, prescribed by a time-honored custom, in presenting what you may please to call the annual address.

I greet and welcome you all to our 37th annual meeting, and trust that it may be fittingly celebrated by both mind and body. We present for your edification a program that is not the product of chance, but which represents the earnest labor and deliberations of the several committees, whom I thank most heartily for their cordial co-operation. It is for you to enjoy. The more you get out of it, the better will its promoters be repaid.

Many of you have come long distances. Some of you have brought valuable contributions for the cause of dentistry, but I dare say that most of us depart from these meetings taking more away than we brought to them. This is as it should be, as it is the very essence of a society's function to benefit the many rather than the few. An organization that fulfills such a mission need never apologize for its existence.

I regret that a larger per cent of Ohio's 2,000 dentists do not habitually attend these meetings. Where so many attractions are presented, aimed to satisfy all tastes, it is strange that so many will deny themselves the benefits they would receive from coming into closer touch with each other. Most of us can upon occasion find the time to attend horse-races or to take hunting and fishing trips, but it is remarkable that a veritable epidemic of dental maladies arise just about the time of the dental meeting, compelling so many against their wills to stay at home. A board of commissioners to solve this problem might not be out of place.

## PROFESSIONAL ADVANCES.

To enumerate the many recent advances made in the art and science of dentistry would be a stupendous task, which

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*Read at the Thirty-seventh Annual Meeting of the Ohio State Dental Society, December 2, 1902.

I will not now undertake. Since last we met a new dental law has been enacted which requires all applicants for licenses to practise in Ohio, to be graduates and also to pass an examination of the State Board of Dental Examiners. I believe this to be a long step forward in the direction of higher professional standards, and in ultimately bringing about uniform and reciprocal relations with all the States as well. Among other notable events are the bacteriological and chemical researches conducted by Drs. Michaels of Paris and E. C. Kirk of Philadelphia, from which valuable data have been secured in establishing the cause of dental erosion, also the importance of the saliva as a diagnostic agent in systemic disorders.

### RESEARCH FUND.

In this branch of science, seeking to unravel the mysteries of the unknown, there will always be room for workers, and yet, for obvious reasons this field is neglected, even by those who have the inclination and are fitted for the work. The action recently taken in the New York State Dental Society by raising a liberal fund to encourage scientific research, is highly commendable in stimulating action in this direction. We and others might emulate the example in aiding such an important movement. As an initial step, I do therefore recommend, that this society set aside annually $100.00 to create a fund to be known as the "Scientific Research Fund." Said fund to be controlled by the directors or a special committee of this body, and to be used only for rewarding original investigators for meritorious discoveries directly related to dentistry. The custodians of the fund to be authorized to co-operate with representatives of other dental organizations having a similar plan of operation, the aim of each being, of course, the mutual advancement of dental science.

At first thought, some of you may think the above an insignificant amount for such a grand object; but if it were combined with an equal amount set aside by each of twenty-five or more societies, which is not at all improbable, there would be an amount of at least $2,500 available for the purpose annually. I'm sure that such an amount could be spared every year from the natural resources of this society without further tax upon its members, although each would be a contributor by virtue of his membership. Neither would such a plan interfere with the generosity of individuals or societies wishing to contribute independently. I submit this proposition for your respectful consideration.

Such discoveries, while of infinite value universally, do more and go farther in establishing a secure footing for dentistry than anything else can, and in answering the arguments of those who oppose dentistry as an independent calling, even to the extent of supplanting the dental by a medical degree. This brings to mind also the proposition that a dentist's education should begin in a medical school, about which there is more or less controversy.

The service demanded of the dentist is almost entirely manipulative, calling for the highest order of technical skill for its accomplishment. Indeed, his technical attainments must be *extraordinary;* as all operations upon the teeth must resist physical strain, chemical and vital agencies, and possess esthetic and artistic features as well. To properly prepare one to fulfill these requirements, a systematic course of manual training must be adopted which best fits the student to this end. This process, to be most efficient, must be included in the *beginning* of the course of study along with anatomy, physiology, pathology, chemistry, materia medica, and kindred sciences. The dental degree must represent efficiency in all these subjects. If it does, it is here to stay. Our destiny is altogether in the keeping of the dental colleges.

To begin a dentist's education in a medical college would be detrimental to his manual training. If the medical degree is coveted, a commendable ambition, it should be sought after the dental degree has been obtained. It is in the earliest years that manual skill is best acquired, while a matured mind is best fitted for scientific broadening. The remarkable technic of a Paganini or a Paderewski is not acquired late in life, neither can we expect a dental student to be benefited by deferring his manual training.

I care not how extensive one's knowledge may be in general medicine and surgery, or in the allied sciences, if he does not also possess the requisite technical skill to successfully fulfill the demands made upon him in the multitudinous operations required in the mouth, he is a failure as a dentist.

On the other hand, a dentist whose knowledge is confined merely to the technical, is a one-sided product, unworthy of the fullest measure of confidence from his co-laborers in other branches of the healing art. Specialism does not mean narrowness, although it may tend to it. On the contrary, it should stand for thoroughness in the highest sense in whatever branch it is applied. The dentist should possess a sufficiently thorough knowledge in pathology to recognize the various lesions as manifested in the mouth, and to discriminate between simple stomatitis, mercurial salivation, or syphilitic complications. He should be sufficiently versed in chemistry and bacteriology to test the secretions within the mouth, that he may determine more or less accurately the factors at work in destroying the teeth. All of this, and more, the 20th century dentist must know and the 20th century dental colleges must teach.

It is claimed that dental colleges have exalted the technical branches and almost excluded the scientific from their courses of study. If there are such, they are not worthy the name and should be ostracised by the profession. There is no reason why the curricula of dental colleges should not be properly balanced nor that their teachers should be inferior.

I believe in the broadest possible culture of the dentist, and can see no reasonable excuse why he should not be the peer in learning of other professional men. The door to knowledge is an open one. Books upon all subjects are to be had almost for the asking. If he thinks he knows it all after graduation, and ceases to be a student of nature and avoids books, which I fear is too often the case, he must not expect equal recognition from those advanced in the scientific and intellectual world. Thus it is largely individual merit that counts after all.

From the celebrated address of Sir Michael Foster, at the meeting of the International Dental Congress, held at Cambridge, Eng., I quote as follows:

"From the broad basis of a general school education the narrowing of professional training begins. The dentist is a healer; his business lies with a very small portion of the human frame, but that portion, though small, is still human. The dentist is a surgeon and something more. He has, like the physician, to possess a general knowledge of disease, and like the surgeon a certain skill of hand; but besides this he has to acquire a special manual dexterity never called for in the surgeon, and to possess a special knowledge of metallurgy, of chemico-physics, and of mechanics, of which neither the physician nor the surgeon need know anything at all.

"The dentist, if he is to excel in his art, cannot hope to know all that the physician must know and the surgeon must know; such being the case, I would therefore urge you to continue on the lines which will train a dentist for his own profession from first to last."

These words, coming from such an authority, are the greatest tribute ever paid to the independent system of dental education. A system which originated in this country, a little more than half a century ago, under most discouraging conditions, and whatever its past shortcomings may have been, it slowly but surely forged ahead, until it has attained a position of importance in the educational affairs of the world.

Before the next annual meeting of this Society, the course of study in all dental colleges will have been extended to four years. Surely, this will be a great advance in our educational system, permitting a curriculum so broad, so thorough, that its product must be the equal of any profession.

In importance, in attainments, in dignity, dentistry occupies to-day a position of safety that will endure so long as its disciples remain true to and practise the high principles demanded of professional men. The outlook was never brighter. Let us always be loyal to its best interests, each contributing what he can to exalt its standards. As healers, let us emulate the example of Him who went about doing good to His fellowmen, and all will be well.

# CURRENT ARTICLES

[Condensed for THE DENTAL SUMMARY readers.]

## A METHOD OF RESTORING FIRST UPPER BICUSPID CROWNS.

BY H. W. P. BENNETTE, L. D. S., ENGLAND.

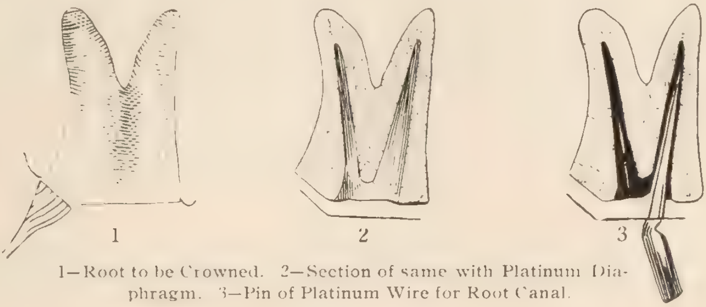
We not infrequently meet with first upper bicuspids which call forth many points for consideration, before we can finally decide what is best to do with them, in order that they shall be restored to usefulness, from the mastication point of view, and yet not show too glaringly that they have been repaired.

In the majority of cases where the conditions presented call for a restoration by crowning, the "all-gold" crown is excluded on account of its unsightliness, however well it may be made. At any rate English ladies have a strong objection to its use, and I must say I never, unless the patient is a male with a convenient moustache, fit an "all-gold" first bicuspid crown, and then only if the bite, as indicated by the state of the other teeth, is evidently very heavy.

The method I have tried in a few cases is one which I hope will prove useful and lasting. I use it where the root, on account of decay has to be cut away below the gum margin all around. It consists of fixing a porcelain face and building up the back with amalgam.

The instrument I use for cutting down the root is the largest size of inverted cone bur. Using the end of the bur held firmly in the hand-piece, I find it cuts beautifully, and if sufficient care is exercised the gum need not be made to bleed.

The root surface is shaped flat with the exception of the buccal one-third (say) which is sloped off so as to allow the porcelain face to fit well under the gum.



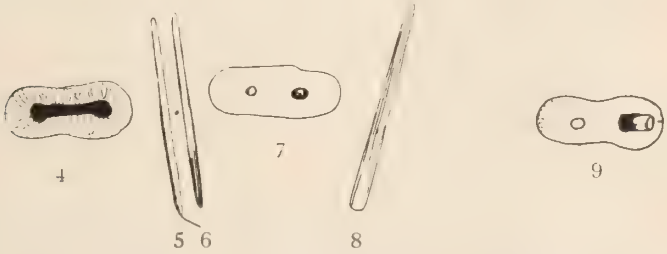
1—Root to be Crowned. 2—Section of same with Platinum Diaphragm. 3—Pin of Platinum Wire for Root Canal.

The next step is to drill out the two root canals and when these are rendered perfectly aseptic their apices are sealed.

A pin filed down out of thick platinum wire is now made to fit the palatine root canal. Two other pins are also made to fit the buccal root canal, one of copper, and another the exact copy of the copper one of dental alloy or platinum.

The part the copper pin plays will be seen presently.

A piece of platinum foil is next burnished to the surface of the root and the palatine platinum pin is passed through it and soldered just as an ordinary pivot pin and diaphragm would be.



4—Plan of Root Surface. 5—Root Pin of Dental Alloy or Platinum. 6—Root Pin of Copper. 7—Platinum Diaphragm. 8—Platinum Palatine Pin. 9—Platinum Diaphragm and Platinum Post Soldered.

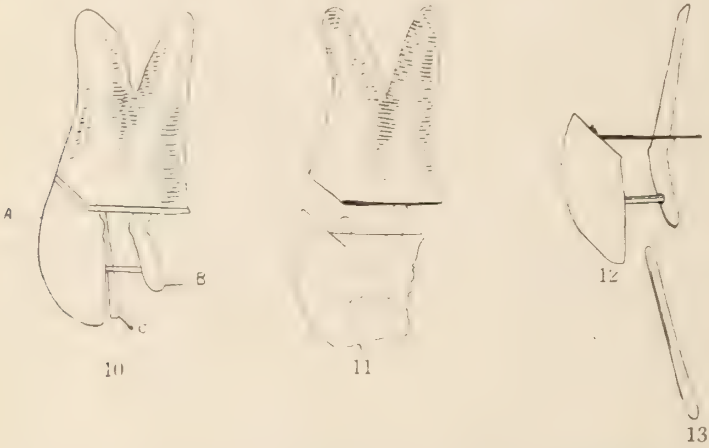
Press the platinum diaphragm down on to the root edges so as to ascertain the exact size it must be, and remove in order to cut and trim the same.

Now with a file notch the platinum pin on its palatine aspect, just above where it has been soldered to the diaphragm, and with a pair of pliers bend it slightly towards the palate.

Next pierce a hole in the diaphragm so as to allow of the copper pin and eventually of the dental alloy pin passing into the buccal canal. With this in position grind and fit a suitable canine porcelain face.

It will be found necessary to groove the back of the porcelain face with a wheel stone, in order to accommodate the buccal pin.

When this is done it will be found that the platinum palatine pin almost touches the pins of the tooth. If it does not, make it do so.



10—A, Porcelain Face Fitted; B, Platinum Pin; C, Copper Pins. 11—Waxed Up for Soldering. 12—Pieces Soldered and Boiled in Nitric Acid Ready for Cementing. 13—Alloy Buccal Pin.

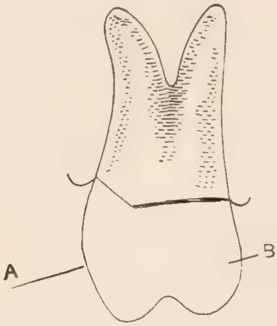
The whole is now almost ready to wax in position. But first withdraw the copper pin and cut it short so that it will only just pass through the diaphragm and not into the root.

Out of the mouth wax the pieces together and while the wax is soft and yielding replace and twist the porcelain face into the required position.

Again withdraw, and invest in investing material of some kind.

When the investment is set boil out the wax and flow solder all over the diaphragm. It will be found to solder up the notch on the platinum pin, and flow all around the copper post. Also solder the pins of the tooth to the platinum pin.

When this is cool break away the investment and boil in *nitric acid.* The acid dissolves the copper post leaving a passage for the dental alloy post.



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14—Finished Crown; A, Porcelain Face; B, Amalgam Cusp.

The fixing in the mouth is very simple.

Both platinum pin and dental alloy pin are notched with a file or otherwise roughened. It is cemented to the root by fixing first the palatine pin and tooth in position, and while the cement is soft the dental alloy pin is forced into the buccal canal. The whole is held securely there until set.

The many excellent properties of "Ames Oxy-Phosphate of Copper" recommend it strongly as a cement. The fact that it is black does not debar its use in this position.

When the cement employed has set, a matrix is fixed and the back is built up with amalgam.

The two pins of the roots and the pins of the tooth give ample anchorage for the amalgam.

In fitting the matrix, which should be done very carefully, take care that it is shallow enough to permit of accurate occlusion, so that less trimming will be necessary when the matrix is removed. This may be done before the amalgam has become too hard to cut or scrape.

At a subsequent visit, when the amalgam is thoroughly hard, the repair can be finished and polished with suitable stones and a little pumice used with a buff.—*Extract Dental Record.*

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## A NEW BACKING.

BY C. E. POST, D. D. S., SAN FRANCISCO, CAL.

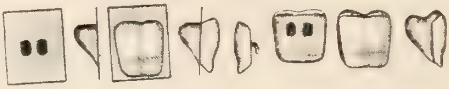
How many are there among us who have not been annoyed almost beyond endurance by having facings that have been soldered to crowns and bridges break off? Generally they are broken whilst the patient is taking some soft food or drink.

Many of us have, while looking pleasant, but feeling very much other wise, wondered why some inventive genius has not invented a simple practical method by which much annoyance to both patient and operator would be saved.

Several methods have been invented. Mason's facings and backings is one, but lack of stock is a great drawback in making a suitable selection in size and color.

I have derived the most satisfaction from Teague's backing, for by the use of this backing any tooth, plate or vulcanite can be used, and secured without having to be heated when soldering the parts.

These backings come in different sizes, from the largest molar to the smallest incisor, and consist of a piece of clasp metal nearly large enough to cover back of facing, with holes punched in it to accommodate tooth pins. This is set in a piece of pure gold that has a recess to accommodate the tooth pins and a sufficient quantity of cement to securely hold the facing in place.



The accompanying illustration shows more clearly than I can describe it, the method of using them.

The facing is ground to fit the case the same as for any backing, the ends and sides are beveled, the pins are bent up close to facing, as is shown in illustration, the backing is slipped on and held in place with the finger while the pure gold of backing is burnished to back of facing and all its beveled edges; the facing and backing are then waxed in position on crown or bridge, the facing is then slipped off and the piece invested and soldered, care being taken not to get any solder on side of backing next to facing.

The backings are so shaped that it takes a minimum amount of solder to secure proper contour at the back. The great advantage in the use of these backings is the ease with which a broken crown or bridge can be repaired, both as regards manipulation and time; also there is no weakening of bridge or crown, as there is where holes have to be drilled to accommodate pins.—*Pacific Gazette.*

## THE STAPLE CROWN.

BY H. E. EATON, D. D. S., TORONTO, CANADA.

This crown is intended to take the place of the open-face crown, and is indicated in the following cases:

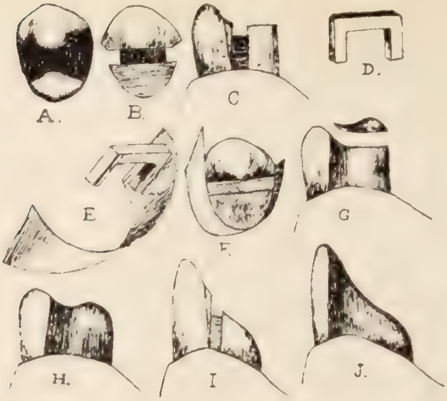
1. A biscupid with large mesial and distal cavities, lingual wall very frail, buccal wall comparatively strong. (See Fig. A.)

2. Where it is desirable to replace a first or second bicuspid by attaching a dummy to the remaining bicuspid, which may be perfect, or affected, as in case No. 1.

3. Where it is desirable to attach a dummy to replace any one of the six anterior teeth.

4. To serve as an attachment especially for the anterior end of a bridge.

The preparation of the tooth for this crown is as follows—taking first case No. 1 (Fig. A.):



Excavate the cavities and fill with cement. Trim down lingual cusp as in Fig. C. With a fissure bur or inverted cone form a groove extending from the gum line on the mesial surface to the morsal surface, across the morsal surface mesio-distally and down to the gum line on the distal surface. (See Figs. B and C.)

With a piece of square iridio-platinum posting, gauge 16, form a staple (Fig. D) to perfectly fit the groove. When placed in position it should exactly fill it. Cut a band of pure gold, or green gold, which works as softly as the pure gold, and attach to the distal leg of the staple 1-16 in. from the end of the band, as in Fig. E. Place the staple in the groove and wrap the band around the lingual surface of the tooth—trimming to fit the gum-line—bring the end in contact with the mesial leg of the staple (Fig. F). Mark the contact point, remove, solder, and trim. Place again on the tooth, trim the band even with the ground morsal surface. Swage cusp to fit approximately (Fig. G), attach to band at one point, place in position on the tooth, burnish to fit, seeing that the occlusion is correct. Remove, solder, trim and polish. The crown is now ready to be set. Fig. H shows the crown in position.

In case No. 2, if the tooth upon which the crown is to be placed for the attachment is a perfect tooth, the lingual cusp may be ground down, and the groove made without interference with the pulp, and likewise with cases 3 and 4.

When the staple crown is completed as described above, the attachment of the dummy is made as in case of any shell crown, flowing the solder well over the lingual surface for strength. Fig. I shows an incisor prepared for the crown, and Fig. J the crown in place.

The advantages of the staple crown are: (1) Its very secure anchorage in the tooth by a well-fitted staple. (2) The absence of a show of gold. (3) The contour of the tooth is not destroyed, as in the case of an open-face crown.—*Dominion Journal.*

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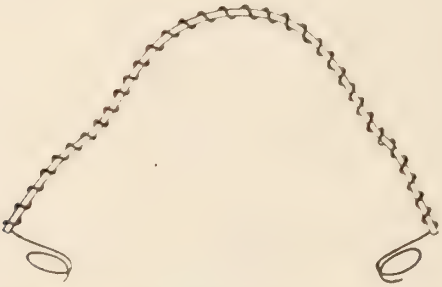
## THE WRAPPED STRENGTHENER.

### BY WALTER H. COFFIN, LONDON.

The very simple form of strengthener for vulcanite work here pictured has been used for twenty-five years by several practitioners, and (for lower dentures) to the practical exclusion of other kinds, being readily adapted, stronger in comparison to bulk, and of more uniform "bending modulus" at all parts than a roughened, beaded or studded wire; is easily held in position during vulcanization, and the rubber cannot strip or peel from it in finishing, polishing, or in wear. It was shown some years ago at a London meeting, but has not, so far as I am aware, been fully described or illustrated before. It consists of a smooth wire core, wrapped in an open, widely spaced spiral, by a very fine round wire, which is then soldered to it. The wire core, which for coresponding strength can be smaller than the plain wire frequently used, may be of any section, round, oval, or half round (the latter forms being sometimes advantageous), and of any suitable material. Stiff or "band" gold alloy is perhaps preferable, but mild steel, heavily gilt or well tinned, may be employed for temporary cases. The thin wrapping wire should be of platinum or high grade gold; and the size of which the lightest and best gold springs are made, or finer, is suitable. To construct, it is only necessary to first bend the plain wire core to the shape of the model along the line it is to occupy, then wind the wrapping wire upon it, and solder.

If thoroughly and uniformly attached by using fine solder fillings, the combined core and spiral envelope are very strong and neat.

In entire dentures, or cases where there are no clasps or other fixtures which it may carry, it is perfectly held in position, if necessary, by leaving an inch or so of the wrapping wire free at each end, and waxing up the case over the strengthener, with these two free ends protruding to be embraced by the plaster investment in the flask. The illustration shows the terminations of the wrapping-wire disposed for this purpose. When finished, a plate reveals a wrapped strengthener by a series of gold or platinum dots, or minute stitches as of a bullion thread.



These types of strengtheners were the outcome of experiments I made some thirty years ago on the practicability of using mild steel, variously protected.

Whether heavily gilt, platinized, nickeled or otherwise coated, the results were invariably failures if the steel, however protected, was exposed, to even the minutest degree, on the surface of a finished plate. It may be interesting to record that, even when perfectly buried and covered in vulcanized rubber, steel which was most carefully gilt or platinized underwent deterioration and eventually broke with a disintegrated or crystalline fracture.

When steel was carefully and heavily tinned, and entirely inclosed in the vulcanite, it appeared to be perfectly successful, but there are great mechanical difficulties in effecting this. Even when wound with a wrapping-wire of precious metal it nearly always broke down. If wound and *soldered* in any way, the deterioration was invariably more rapid. But a practical point emerged which may be worth mentioning. When a broken lower vulcanite plate has to be repaired, and in the smallest bulk the maximum strength secured by the insertion of a fragment of metal as a splint across the joint, a piece of steel wire may be used with great confidence, if in the vulcanite a groove can be cut which shall so hold and secure the wire that it may not be exposed at all either on the surface of the finished plate, or be intersected by any cleavage plane between old and new rubber. The wire, either single or doubled upon itself, should be either roughened or widely wrapped with fine wire of any kind (iron binding-wire is perfectly sufficient), and in any case thoroughly and heavily tinned. If securely wedged, as an "inlay" into its groove, a strong and neat repair may be effected with the advantage (not a negligible consideration where such things have so frequently to be done gratuitously) of the utmost possible economy. Several such cases, to my surprise, have been under observation for some years with no signs of a breakdown.—*Journal British Dental Association.*

# CROWN AND BRIDGE-WORK IN RELATION TO THE VITALITY OF THE PULPS IN THE SUPPORTING TEETH.

BY F. A. PEESO, D. D. S., PHILADELPHIA, PA

This is a most important subject and requires serious consideration on the part of the operator. Since crown and bridge-work became a legitimate procedure in dentistry, the question as to the advisability of putting a crown on a tooth having a living pulp has been, and still continues to be, agitated, with the prospect of its being settled seemingly as far in the dim and distant future as it was when first the discussion was started. A great deal has been said and written on the subject to prove on the one side that a tooth should always be devitalized before crowning, and on the other that it is absolutely necessary to preserve the pulp at any cost.

It is not safe to be guided by either of these extreme opinions. A happy medium is the safest course, using good judgment and carefully studying each case. It is true that in some cases where a vital tooth is crowned, if it has been necessary to cut away a good deal of the tooth-structure the shock due to the grinding and irritation caused by the irritative action of the cement on the dentin may be so great as to endanger the health or the life of the pulp. It is known that it may cause pulp-stones, and the death of the pulp is apt to result in alveolar abscess. These results, however, are not always due to the fact that the pulp was not removed, or to the irritating action of the cement, but by poorly articulated work, improperly prepared teeth and roots, and poorly fitted bands, causing gingival irritation which may react on the pulp.

When cementing a bridge in the mouth, the action of the cement on the dentin is sometimes peculiar and unaccounted for, so far as the knowledge of the writer goes. Where much of the tooth-structure has been ground away, leaving the tooth very sensitive, it will ache very badly when thoroughly dried, previous to setting the bridge or crown. The application of the piece with the cement frequently causes such excruciating pain as to be almost unbearable for a time, but it will gradually subside, until in about fifteen minutes it is not much more than a dull ache, although the tooth may continue to be uncomfortable for some hours. In another mouth, where the conditions are seemingly exactly the same, the teeth being equally sensitive and aching as badly when dried, when the piece is cemented in place the pain will cease instantly and the mouth be perfectly comfortable.

What chemical or physiological action takes place remains to be discovered, but it is certain that the action of the cement on the tooth-structure in one mouth may be directly the opposite from what it will be in another.

An experience of fifteen years seems to show that there is very little, if any, difference in the efficiency of vital or devitalized teeth in doing the work of supporting crowns or bridges, providing the teeth are properly prepared and the bands are accurately fitted. These last are the most important considerations.

In the case of a very young subject, where the roots are not fully developed and the apical foramen is enlarged, it would not be advisable to devitalize unless there has been so much irritation as to render it absolutely necessary. With a very elderly patient, where through the formation of secondary dentin the pulp has become practically obliterated, it would not be necessary, unless the canal was needed in which to place a pin in order to give additional support to the piece.

Where a tooth is not sensitive, or only slightly so, or decayed and broken down so as to require very little cutting, and it can be properly prepared with very little inconvenience to the patient, it is perhaps advisable to preserve the pulp. If there are deep cavities which are sensitive after being excavated, they should be given a coating of cavitine or other insulating varnish, or filled with some non-irritating, non-conducting material, so that there will be no irritation to the pulp.

Where the position or shape of the tooth is such as to render it necessary to do a great deal of cutting, and the tooth is very sensitive, it would be cruel, to say the least, to expect the patient to undergo the torture which would necessarily accompany its proper preparation. It would be advisable to devitalize such a tooth and the roots should be filled at the same sitting. The different methods of doing this will be taken up in another chapter.

A loose tooth will often become firm in its socket if the pulp is removed, and in the case of one which is to be used as an abutment for a bridge, it would always be well to devitalize it. In many instances this will effect a speedy and perfect cure where scaling and treating have no effect.

Suppose where a vital tooth has been crowned at some future time trouble does arise which results in the death of the pulp; the condition is then no worse than at the beginning. The tooth can be treated in the same way as any other tooth, and there is no necessity for removing the bridge or crown. An opening can be made through the cusps, the pulp removed, and the canals filled. The bulk of the cavity can then be filled with any suitable material, such as gutta-percha or cement, and the balance with gold, which will make the crown as good as though it had never been cut at all.

To sum up, there are certain constitutional, temperamental, and local conditions which would render devitalization necessary in one patient and not in another. The dentist must make his own diagnosis and settle the question for himself in accordance with the conditions presented by the individual case. —*Extract Cosmos.*

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# LITTLE THINGS WORTH KNOWING AND HAVING IN A DENTAL PRACTICE.

BY H. L. PEARSON, D. D. S., M'KINNEY, TEXAS.

We all have much wasted wax, which can be used with pleasure and profit. Get an ordinary-sized metal bucket, fill about one-third full of water, then put your scraps of wax in, and place on fire, and boil until all wax is melted, then strain wax through a cloth or sieve, or take a large spoon or paddle made of wood, and fish out all debris of every kind. After your wax has been cleansed, and while yet hot, take it off of the fire and let cool several degrees; a little practice will teach you. Place another bucket, nearly full of cool, clean water, near the bucket with wax, then get a large-sized bottle, either a half or gallon size, fill it with cool, not cold, water, tie a strong string with a loop in it around the neck of the bottle, then soap the bottle all over outside, and dip your bottle in the bucket of melted wax and immediately withdraw it; pause long enough to let wax stop dripping, then repeat in this way two or three times; then place the bottle in the bucket of cool water; when cool, remove from the water. Take a knife and cut wax from bottom of bottle, in a circular fashion, then cut a perpendicular, then with your hand you can remove the wax from the bottle, which you will find to be a large and pretty sheet of wax. You are now ready to dip the bottle in the bucket of wax again. Resoap every few minutes. The thickness of your wax depends on the number of times you dip your bottle in the wax bucket, and the temperature of the wax. You can cut the sheets of wax while warm in any size pieces you desire. With the ordinary wax we get, you will have to melt a certain amount of gutta-percha with your wax, to make it stiff and pliable.

To make an open-faced crown. Take measure of tooth in the ordinary way. I cut out a piece of No. 60 tin-foil to approximate the amount or sized piece of gold needed, then cut out gold by this pattern, and make band by drawing the ends together, solder band just a little for neck of the tooth; now place over your natural tooth or cast to make it fit the neck of tooth; then, with a short pair of curved scissors, cut out windows on lingual and labial surfaces, and burnish the gold well up on approximal surfaces, making it fit the tooth everywhere, Should it be a cuspid tooth, let the gold extend high enough above the approximal surfaces that the ends will meet when burnished over the cutting edge, then solder these ends together. You will now observe that you have a window on the lingual, as well as the labial surface, burnish a piece of gold over opening on lingual surface, then solder. Finish your crown in the ordinary way.

To construct a trial plate and take an articulation. Place model before you on table, and take one of Dr. J. G. Graft's base plates and place over the model, have a glass of water convenient; take your blowpipe and throw a flame to heat this base plate, but be careful not to burn it. While base plate is soft place your fingers in the water to cool them (and press the base plate on model, and make it fit as well as possible. Then take your fine saw and cut the base plate around the ridge, or labial surface, or while warm you can cut with scissors, if preferred. Now place a rim of wax over this on ridge and labial surface, to bring out contour. You will now place in the mouth and trim wax on ridge until it is the length of the lip; trim or add wax to labial surface to give contour of face. Now take the base plate for the other half of the mouth, and do the same, then close both in the mouth and have patient to close mouth; then cut away or add to until the edges of the wax are on a line around the ridge. Have patient open mouth often, and watch closure. Ask patient if pressure is the same everywhere. If not, cut until it is; take out plates together from time to time, and trim on lingual side, making it look as well there as on opposite side. When you have it as desired, have patient close mouth and keep it closed; then, with your wax-knife, heat and fasten the two together. If necessary, cut off the heads of three pins and bend them in staple fashion to assist in holding the two together. Now have patient raise the upper lip as high as he can naturally, then mark from one corner of lip to opposite corner in a circular way, which shows the height of the lip; now have the patient to draw the lower lip down as far as he can and mark the lower trial plate in the same way; then mark your median line, using the center of the nose as the guide. It is now ready to be removed from the mouth and waxed to the model. In taking an articulation, never tell the patient to bite, but use the word "close." After you have waxed your trial plate to your model and placed it on your articulator, never remove this trial plate or articulation only by degrees, until you are ready to place your teeth on model; commence with a central upper incisor. With your knife cut out wax enough on articulating plate to let the tooth fit in; the line shown above and below indicate the length of teeth that should be used. The apex of the tooth should go beyond this line, to prevent showing the rubber when patient raises the lip while laughing. When you have fitted in your tooth, then cut out space for the lateral, and so on, until you have placed all teeth on that side, except the second molar; then commence with lower teeth on same side and adjust to upper teeth, then with the other side above, then the lower; but in each instance, leave off the second molars until all the rest of the teeth are adjusted as desired. By this time, or before, your upper trial plates will come apart. You can now place your upper second molars in place, and then the lowers, leaving the second molars off until the last is done, to avoid a possible mistake in the articulation, should the articulator move without being observed, the rim of wax on side being an accurate guide. That you may comprehend my meaning more fully, I present herewith a trial plate or articulation for your inspection. I have also Dr. R. C. Brophy's gasoline outfit with blowpipe, a jet for porcelain work, and a jet for heating water, or investments. I find it very convenient. I can have hot water to sterilize my instruments within three minutes, or in so short a time that I find it a pleasure, and not labor. I lose no time from one patient to the other, and they appreciate the precaution you take to protect them from transmitting disease from one patient to another.—*Extract Texas Journal.*

## DESCRIBING THE CREATION OF THE INTERPROXIMAL SPACE BY SURGICAL MEANS.

BY DR. J. E. NYMAN.

I supposed that I was going to present something which was original, but in discussing the matter with a practitioner the other day he told me that he had operated in that manner half a dozen times. The case was this: A gentleman of about thirty-five presented himself to me, complaining of a great deal of discomfort in the region between the lower right first molar and second bicuspid. Upon examination I found two amalgam fillings which had no contour whatever, and there was contact from a point a millimeter above the gum to as far down below the gum as I was able to run a probe. There had been a complete obliteration of the interproximal space. This condition had probably been aggravated by the late eruption of a third molar. There was no way in which those teeth could be separated. The presence of the third molar abutting aginst the ramus of the jaw precluded a movement in that direction The cuspid occluded in such a manner that it was practically impossible to obtain any movement of the teeth anteriorly. Both teeth were in a state which made it evident that they must be crowned. Of course it would not do to crown the teeth with that interproximal condition. So I concluded to establish an interproximal space. I injected the interproximal region very extensively with a one-fifth of one grain cocaine solution; afterward I took a steel instrument the diameter of one millimeter and forced it through between the roots of those teeth at a point about three millimeters below the gum margin—*i. e.*, I went down to a point to where I could find a space between the roots. Then with a small fissure-bur I cut through between the teeth, being careful not to sever the gum septum at the buccal and lingual aspect. This bur was followed by another of larger diameter, until finally I had space in there of about one and a half millimeters. Each time I carried down the bur until I touched the steel instrument. After this had been accomplished, the cavity was thoroughly washed out and a shelf cut in both the molar and bicuspid and a piece of 26-gauge platinum was laid across and gutta-percha packed on top of it. The patient was instructed to wash the cavity out carefully after each meal with a solution of boracic acid and salt and water. The case made an uneventful recovery and there was a gum septum formed in there, and after waiting for a period of about two months I crowned both teeth. That occurred about four years ago. I saw the patient less than a year ago and that interproximal tissue was in perfect condition, so far as could be detected, and he assured me that it had never given any trouble. Since operating on that case I have had one more, where the conditions were identical, and in the same locality. That case I operated upon about two years ago. I have not seen it for over a year, but the last time I saw it everything was in a healthy condition.—*Review.*

## A QUICK WAY OF MAKING A RUBBER PLATE.

BY C. H. WORBOYS, D. D. S., ALBION, MICH.

To know how to construct a set of teeth in a very short time is a very convenient thing sometimes; the object of this paper is to give you a plan by which it may be accomplished, and at the same time do so in such a way that you will be able to proceed with great exactness. This description will be for a full upper denture. A tray is selected that is smooth, and fits the jaw as close as it is easy to use on the case, and then an impression is taken in modeling compound; this impression should be thoroughly chilled, and then carefully slipped from the tray, with a sharp knife. Now trim the impression to just the outline that the plate is to have, and do any relieving along the hard ridge that may be considered necessary; at the edge and across the back make it quite thin. Now try it in the mouth, and if it is all right, remove and wax up for a bite.

At this point I wish to call your attention to two anatomical points of the human skull, that we seem to forget exist when we are constructing an artificial denture for the upper jaw; namely, the canine ridge and the canine fossa. These should be reproduced, and one is just as important as the other in order to restore the face to its former appearance. Another point is the correct distance between the jaws. This is difficult to ascertain where there is no record of measurements. It is my practice to take the distance between the nose and the point of the chin with a pair of dividers, and from the same point under the nose to the cutting edge of the central upper incisor, with the color width and length of the tooth, all of which are registered with the patient's name before the extracting is done. These measurements are very valuable when the time comes for constructing the plate.

Having secured the bite, the incisors are now waxed onto the impression and arranged as desired; the bicuspids and molars are set and articulated to the lower teeth on one side first, and should be firmly waxed, then those of the other side are set up and articulated, all of this being tried in the mouth from time to time; wax smooth, and finally with a sharp scraper cut the modeling compound as thin as you wish the plate, and it is now ready for the flask, which I open by using warm water to heat the compound, and continue as usual with a rubber plate.

Sometimes the teeth have to be set so close to the gum that the above process cannot be followed, and in such cases I take an impression of the lower teeth, run up a model and then fill the upper impression and set the whole on the articulator to arrange the teeth and that only requires a few minutes longer.—*American Journal.*

# SOCIETY PROCEEDINGS

## OHIO STATE DENTAL SOCIETY.

### DISCUSSION OF DR. SEMAN'S PAPER.

### THE RADICAL PREPARATION OF CAVITIES.*

**Dr. M. H. Fletcher**:—If it were possible to discuss the subject of saving the teeth from the results of dental caries from the mechanical point of view, I don't know that I could take any exceptions to the position of the essayist, as technically I would approve his methods so far as he has declared them. It is, however, the dentist's business to not only repair the ravages of decay mechanically, but he is in duty bound to do whatsoever is possible to prevent not only recurrence of decay, but its occurrence as well. We all know full well that no mechanical art or skill will avail to save some teeth. It is in these cases where the dentist is forced to exercise his skill as physician and resort to the art of therapeutics or sanitation.

It is not final treatment to repair broken down tooth structure by any kind of radical mechanics. For if the active cause of the disease which broke down the tooth tissue in the first instance will very likely prevail over any form of mechanical art, however, perfect it may be. We should not be greatly troubled when our best technical efforts fail. I do not believe that it is often practicable to produce immunity from dental caries by any operative procedure, however skillful. Who, for instance, believes that recession of the gums can be adequately treated by any kind of radical mechanical treatment? In this case a condition exists which will not be cared for by such a treatment. Mechanical treatment may be utilized in part; but the pathologic conditions must be overcome and their causes obliterated. Physiologic functions must be re-established and the environment must be made and kept healthy. This cannot be done by any process of extension for prevention, however radical; it many times needs to be largely supplemented by hygienic treatment of the most scientific kind.

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*Paper appeared in March number.

Dr. S. D. Ruggles:—Whilst it is true that therapeutic treatment has much to do with conservative practice, dentistry as largely practiced to-day is confined to efforts made to repair the ravages of decay in the teeth. With some it may be merely patch work, and with others most beautiful works of art. It is clearly evident to every one that the effort to repair lost tooth structure should not be inefficiently or carelessly done. I believe if all tooth tissue which is actually infected, or which is predisposed to infection, were carefully removed and the cavity skillfully filled with an indestructible material that the chances for a recurrence of caries would be greatly hindered. Of course there come periodic events in the history of the teeth, as well as accidental causes when no amount of radical mechanics will be entirely adequate. As I understand it, the idea intended to be developed by the author of the theory of radical extension for prevention, is that a well grounded system of mechanical technique in cavity preparation shall be fundamental and always followed except in such cases as judgment shall otherwise clearly indicate another form of treatment. This erects a standard of excellence or policy to which doubtful cases may be carried, on appeal as it were. In other words it gives us a plan to which we may work and then it lessens the nervous strain, and insures reasonable results. It makes it possible to lay the foundation for every operation with the completed filling in the mind's eye.

Dr. J. B. Beauman:—While I believe in the radical preparation of cavities, I have found that most patients want you to "go easy." Extensive cutting of the teeth necessarily produces pain, and usually the more cutting the more intense the pain. It seems to me that a middle ground is preferable. Of course we must take into account the stress that is to be put upon each filling and secure adequate anchorage, we must also eradicate all pathologic tooth structure and generally such as may be predisposed to decay, at the same time for esthetic and other purposes we are justified in making limited excavations when judgment approves. I started in the practice of dentistry a medically educated man fifty-five years ago, and I recently saw some fillings that I made at that early date in a hotel with none of the valued facilities we now possess for so-called radical operations, and some of these fillings have saved those teeth all these years. It was not radical work as gaged by present standards. I am not sure but careful and adequate adaptation of gold to the cavity walls is a much more important item than cavity preparation, however systematically it may be done. Careful diagnosis and skillful manipulation are both invaluable.

Dr. L. E. Custer.—There is one principle which the discussion of the theory of extension for prevention has developed, that to my mind is of the greatest value, and that is the value of a proper enamel margin to support fillings. When we recall the enormous force to which many fillings are or may be subjected the importance of this matter becomes perfectly clear. The work done by Dr. F. B. Noyes on the physical characteristics of enamel is invaluable as a help in forming correct judgment as to when a proper enamel margin has been obtained. The technique of preparation is also much simplified by a correct idea of the structure of the tissues involved. I would commend a study of this feature in all methods of cavity preparation.

C. A. Hawley.—The value of the system of extension for prevention is also brought out in the wonderful improvement it produces in facility for introduction of the filling material. It gives free access, clear view and every opportunity to make perfect adaptation and stability. It is easier to fill against flat walls, than into grooves or acute angles. Retention forms are such as to be readily accessible because not deep or contracted. In proximal cavities of the molars and bicuspids it makes the work easy, and it is here of the greatest value. This method of cavity preparation has also brought non-cohesive foil again into use, as it can be utilized to the best advantage in such preparation.

Dr. J. F. Stephan.—This method requires angles and straight walls in the dentine, but not necessarily in the enamel. The enamel should in all cases be supported by a layer of dentine beneath, even if it becomes necessary to cleave away a considerable surface of the tooth. The dentine may be cut to acute angles, but all surface enamel margins, in outline at least, should be curved and not angular. No acute nor even right angles should ever be used. All corners should be curved or rounded.

# EDITORIAL

## THE ODONTOGRAPHIC CLINIC.

The members of the Chicago Odontographic Society are to be congratulated on the complete success of their clinic held February 16 and 17, in honor of the fifteenth anniversary of their Society. They have worked zealously for more than a year in the interests of this meeting, and the result must have been eminently satisfactory, especially as it was beyond their most sanguine expectations. Who but Chicagoians, with their progressive spirits and hustling propensities could have brought together such a concourse of dentists from every State in the Union, and when it is considered that it was the doings of only a local dental society, the result seems more astounding. More than three thousand dentists registered, making it by far the largest attended dental meeting ever held, and it will stand alone in history as a challenge to our younger generations of dentists.

The results of this grand meeting will be far-reaching, and are indicative of the fact that dentists are beginning to realize the rapid advancement dentistry is making, and to see the necessity for keeping posted on new and improved methods would they maintain their positions in the front ranks of progressive men.

There was no admission or dues; everybody was invited and welcomed; everybody could see what clinics he desired and remain as long as he chose; something so different from many dental societies that lavishly invite the profession to their meetings, and then exclude from the clinics all dentists not members of the society. Everything at this meeting was free. You could not even spend a cent if a Chicago man had his eye on you, and their perception and sight seem to be of the keenest type.

From beginning to end it was one round of pleasure and profit.

The papers read were excellent and of a high order, while the clinics, many and varied, were given by representative men from nearly every State in the Union, and were held in the large infirmary of the Northwestern University Dental School, a place most admirably suited to this purpose.

The many dental exhibitors occupied the whole of the fifth floor of the building and the display was of the finest.

The meeting was in every sense of the word a grand success.

The social features, consisting of luncheons, dinners, a smoker and a banquet, were extremely enjoyable.

Tuesday evening, the 17th, a banquet was given in the Auditorium Hotel, and about eight hundred guests were served. President C. N. Johnson acted as toastmaster. Dr. J. B. Willmott, Toronto, Can., responded to the toast, "Professional Unity;" Dr. H. W. Gillette to the toast, "The East;" Dr. J. P. Root, "The West;" Dr. H. L. Banzhaf, "The North;" Dr. D. R. Stubblefield, "The South;" Dr. B. Holly Smith, "The Ladies." Music, both instrumental and vocal, recitations, etc., were interspersed and added pleasure to the occasion.

Dr. C. E. Bentley, the first president of the society, who worked arduously for the success of the meeting, was called upon for remarks. He told how the Society had started with thirteen members fifteen years ago, and how it had grown until now it has over five hundred members enrolled, and is the largest local dental society in the world.

Dr. G. B. Perry, E. C. Kirk, R. Ottolengui and others responded happily.

The Odontographic Society members "did themselves proud," and many were the words of praise showered upon them.

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## ETHICAL(?) ADVERTISING.

Some dentists want to be looked upon as ethical by the dental profession, and yet seem to never allow an opportunity to pass to get their names in the newspapers, and often in a way objectionable to a truly ethical dentist.

A mere announcement that Dr. So-and-so has been in attendance at some society meeting, is not in itself objectionable, but when the article goes on to state how much the doctor showed the rest of the profession, or how many new and wonderful things he "captured" at the meeting, and will introduce to the people of ———, it seems to rather overstep the bounds of propriety, and savors of quackish methods. And this is particularly objectionable where a dentist uses an ethical society as a tool to further his self-aggrandizement.

Reading numerous notices regarding the recent Odontographic meeting has brought this matter more forcibly to mind.

For instance, here are a few sample items from various newspapers:

"Dr.———, who is a member of ——— Society, left Saturday night for Chicago, where he is attending the United States and Canadian Dental Association. This is the greatest association of its kind in the world. Every State in the Union and Canada is represented. The greatest clinic known, pertaining to dentistry, will be demonstrated there. Doctor ——— will return Tuesday evening. Office open at eight o'clock Wednesday morning."

"Doctor ——— attended the greatest Dental meeting that was ever held in this country at Chicago, February 16-17. Over 100 chairs were in operation at the same time and everything that is being done up-to-date was shown. The meeting was given under the auspices of the Odontographic Dental Society of Chicago, of which the doctor is a member. It is the largest dental society in the world and no one except a graduate of dental surgery can be a member."

"Doctor ——— returned today from Chicago, where he was attending the fifteenth anniversary of the Odontographic Society, of Chicago.

"Doctor ——— opened the clinic on Monday afternoon before over 2,000 dentists from all parts of the United States and Canada. The doctor's demonstration was ———.

"The State of ——— was allowed a representation of only five dentists to appear and demonstrate before the society. The selection of

Doctor ———— as one of the five is a recognition of his high standing in the dental world."

And so the notices run. It is admitted that oftentimes a reporter, or editor will insert a notice without the dentist's knowledge, and for which he is not responsible, but many come from a friendly "tip."

But no matter just how they happened to be published, there seem to be no records of suits ever having been brought in consequence of their publication.

# SUGGESTIONS

## TO CHECK HEMORRHAGE AFTER EXTIRPATION OF TOOTH PULP.

**A. Eubank.**

Simply dip the point of the broach, with a few fibres of cotton wound around it, in trichloracetic acid and insert to the bottom of the canal. Hold it there a few seconds, and the hemorrhage will cease. This acid used full strength is not half so harmful to tooth structure as sulphuric. It is powerful enough to destroy any microbe and burn up any fibre of the nerve that cannot be removed from flat roots, as well as to cauterize the end of the nerve fibres running into the tooth bone. Without cauterizing the end of the severed nerves, there is great danger of losing the tooth from pressure upon them. Since I have been using this acid I do not remember to have ever lost a tooth from removing the pulp and filling the roots. I invariably practise immediate root-filling.—*Dental Headlight.*

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## CARE IN THE USE OF COAL-TAR DERIVATIVES.

**W. Sinkler.**

It may be out of the scope of this paper to refer to the unfavorable effects of the coal-tar derivatives, but this should always be borne in mind, and one should also be careful to remember that some persons seem to have an idiosyncrasy against these preparations. A case is on record in which cyanosis, syncope, and death have followed a single dose of five grains of acetanilid. I have seen a case in which extreme cyanosis, but no other unfavorable symptoms, followed the dusting of between twenty and thirty grains of powdered acetanilid over a blistered surface. Cutaneous eruptions, usually urticarial, sometimes follow the administration of antipyrin and phenacetine. The more grave consequences of the anilin preparations are profuse sweating, cyanosis, exhaustion, oppression and collapse.

It is now customary to administer with these preparations caffeine, which acts as a cardiac stimulant and counteracts the depressant action of the drug. Ammonium carbonate and camphor monobromide are also given in combination with the coal-tar preparations with the same object.—*Extract Therapeutic Gazette.*

## TREATMENT OF GINGIVAL INFLAMMATION FROM LIGATURES.

**Dr. Deichmiller.**

Sometimes in regulating, the ligatures will work up and inflame the gingivæ. After the ligatures are removed simply direct a spray of pyrozone and the inflammation will soon disappear.—*Pacific Gazette.*

## AMALAGAM DON'TS.

**Harold Clark.**

Don't use the same mix of amalgam for the whole of a large cavity, or the filling will be softer on the surface than beneath, thus inducing a shrinkage that will destroy the adaptation of the filling to the cavity margins.

Don't make your amalgam filling to fit a fee, but try to collect a fee commensurate with an honest filling. If you have to take a lesser fee, the consciousness that you have endeavored to attain an ideal will be no small compensation.—*Extract Dominion.*

## TOOTH BLEACHING.

**H C. Miller.**

The quickest way to bleach a tooth that I know of, when it has not been discolored by alloys, copper, amalgam, essential oils or gum resins, is by using aluminum chlorid and Labarraque's solution. The next is by using powdered alum and moistening with Labarraque's solution. And the next is by moistening the interior of the tooth with dilute sulfuric acid and then filling in sodium dioxid; and last, but not least, is the twenty-five per cent pyrozone method. Pure terebene ($C_{10}H_{16}$) will slowly dissolve the oils. It should be sealed in the tooth and the application renewed once a week.—*Extract Cosmos.*

## AN EFFECTIVE DENTIFRICE.

**J. J. Lawrence.**

By adding a half drachm of the bicarbonate of soda to a three ounce original package of Listerine, a most agreeable and effective dentifrice is secured. Erosions of the gums, sponginess, ulcerations, canker and other unwholesome conditions of the mouth are speedily cured and prevented by the systematic us of this combination. It neutralizes acid conditions, stops fermentation and putrefaction, tones up weak and leaky issues, so that the mouth is not constantly filled with stale or depraved secretions.—*Medical Brief.*

## CARE OF BURNISHERS.

Burnishers of whatever form, spatulas and other smooth-surfaced instruments tarnish, become gold, amalgam, or tin coated, or worse still, gummed with gutta-percha or cement, to remove which calls for some wit and no little time. Perhaps the majority of dentists resort to scraping, and polishing by means of wheel or hand buffs, with satisfactory results, but with loss of considerable time and the handling of several appliances. One little device may, however, be made to do all this work as well, more conveniently and at the expenditure of much less time. It consists of a block of good pine, twelve by two by one inch, scored lengthwise to the depth of three-eighths of an inch by means of a pocket knife and the cuts or slashings filled with fine pumice on one side and chalk, rotten stone or rouge on the other. A tarnished, metal-coated or plastic-begummed instrument is forced into one of the cuts and honed back and forth till the extraneous matter has been removed, which is almost immediately. One side should be reserved exclusively for instruments used in gold work, for here as elsewhere gold is at the mercy of its baser associates—evil associations corrupting clean surfaces.—*Office and Laboratory.*

## CEMENT LINING.

**L. C. Taylor.**

Owing to expansion and shrinkage of most amalgams, the lining of cavities with cement will not produce so good results as the mixing the cement with the amalgam for quite a considerable portion of the filling. With gold for a main portion of our filling, we find it different, as the lining of cement can be used without the disadvantage of expansion and contraction referred to in the use of amalgams.—*Extract Cosmos.*

## TREATMENT OF INFLAMMATION RESULTING FROM THE SETTING OF CROWNS AND BRIDGES.

**B. J. Cigrand.**

Very frequently patients will call, describing slight pain at the gingivæ of a crowned tooth. Possibly you have crowned the tooth and remember that the root was carefully prepared and the crown perfectly constructed. You cannot account for the inflammation. Invariably you treat it with some medicinal agent, but the patient returns with the same suffering and the color lines unchanged. If the fundamental law of surgery is not observed—namely, "Remove the cause," the utility of the crown is seriously interfered with and often the inflammation extends, ending in failure.

If you will take a tube of rubber and cut off a small ring about one-sixteenth of an inch wide and scallop it out so it will complement the alveolar ridge, and slip this over the distressed crowned tooth and dismiss the patient with instructions to return the following day; the next call you may carefully remove the rubber band; do not wipe the circumference of the root with cotton, as the gums are highly sensitive and congested, but bathe the parts with tepid water, forced against the gum from the syringe, and, upon investigation, you will behold nodules of cement. Remove this foreign matter and the gums will rapidly heal and hug the crown. I have observed that innumerable crowns and bridges are causing this condition and it behooves us not to discharge the patients until we have satisfied ourselves that the final work of adjusting and anchoring the crown and bridge has been carefully done. In connection with this do not forget that the durability of a crown and bridge largely depends on having the parts perfectly dry before you bring the crown into position.—*Extract Review.*

## CARE AFTER USE OF PRESSURE ANESTHESIA.

**J. W. Beach.**

When devitalizing by pressure anesthesia the hemorrhage should not be checked, nor the root filled, until it has naturally ceased, as inflammation of the periapical tissues will surely result.—*Extract Cosmos.*

## DEPRESSING TEETH IN THEIR SOCKETS.

**J. N. Farrar.**

After years of observation I have come to the conclusion that it is better to grind off interfering front lower teeth than to run the risk of disturbing nutrition to the pulp by compression. It does no harm whatever to grind the ends of such teeth if it is done carefully. If they are sensitive it should be done a little at a time with intervals of several weeks between. —*International Dental Journal.*

## GOLD CROWN OR AMALGAM FILLING?

**C. E. Pearson.**

The use of gold shell crowns on molars is one of the unnecessary practices in the dental profession, and also to repeat the statement that "so long as the roots of a molar are intact and in such a state of health as to warrant the retention of that tooth in the mouth, it may be restored to usefulness by a contour amalgam filling."—*Extract Cosmos.*

## CARE IN THE USE OF CANAL REAMERS.

**J. W. Beach.**

The use of canal reamers should be avoided whenever feasible, and when employed they should not be carried beyond the apical third of the pulp-canal. Reamers are indicated after extirpation only in those cases where the canal is to be enlarged for a crown-post, and then not until the apical foramen has been carefully sealed.—*Extract Cosmos.*

## REMOVING CRYSTALLIZED CALCIUM SULPHATE FROM RUBBER DENTURES.

**J. A. Bullard.**

To remove the calcium sulphate which adheres to the inner surface of vulcanite plates after vulcanization, especially where the ridge is narrow in a lower case, or the rugæ deep in an upper, making these surfaces hard to clean and polish, the deposit can be removed by placing the plate in a strong solution of HCl. for a short time. Then by using a cup-shaped brush wheel carrying pumice and oil it may be made clean and smooth.—*Review.*

## TO MAKE PLUGGER POINTS.

**F. W. Stephan.**

To serrate a plugger point drive the point to be serrated (which must be softened by annealing) against the well serrated surface of some finished plugger. The serrations will be reproduced on the soft metal which may then be bent to shape and tempered.—*Review.*

## TO CUT OUT FISSURES IN MOLARS.

**F. W. Stephan.**

When necessary to cut out the lingual fissure in upper molars especially, and often in cutting other fissures which extend to the buccal surface, the knife edge corundum or carborundum stone will be found to be the quickest and easiest method to accomplish the purpose.—*Review.*

## PARTIAL LOWER PLATES.

**E. J. Perry.**

In making partial lower sets, where only the incisors and cuspids remain, and such cases are quite too common, it is extremely desirable to perfectly fit the plate to the lingual surfaces of the teeth. First get a plaster impression and obtain model with investment compound. When thoroughly hard burnish platinum foil, No. 1-1000, on the lingual surfaces, allowing the foil to extend around and partially cover the labial sides of the cuspids. Burnish as carefully as you would for an inlay, using punk, cotton and thin blade and ball burnishers. Flow over this foil (without removing it from the model or investment) clasp gold. Cut this in small pieces, and it will be easily distributed evenly with the blowpipe. Now trim, place in the mouth and take impression of the whole. Put the metal into impression carefully, and it then becomes a part of the model. Now proceed to make dies, and swage over stiffener. Then remove stiffener from the model, place in the mouth with plate over it, secure with plaster, remove together, and solder. Perfect fitting clasps can also be made in the same way.—*Review.*

## THE USE OF ALKALIES IN RELIEVING PAIN.

**L. Brunton.**

L. Brunton recommends the placing of a little bicarbonate of soda, on cotton in the cavity of an aching tooth for relief of pain. The bicarbonate of soda may be mixed with laudanum or cocaine to lessen irritability of the nerves. Where gums are retracted and the tooth sensitive about the neck, either rub a little bicarbonate along the edge of the gum with the fingers, or thoroughly rinse the mouth with an aqueous solution, using about one teaspoonful bicarbonate to half a glass of water.

## A REMEDY FOR STOMATITIS.

**N. Novikow.**

N. Novikom recommends a gargle and mouthwash of peroxide of hydrogen, from two to three teaspoonsful to a glass of water, for the cure of stomatitis, particularly mercurial stomatitis.

## METHOD TO CONVERT ROUND BURS INTO INVERTED CONE BURS.

**W. H. Hersh.**

Every dentist of any experience has in his case a great many worn-out burs. If he will take his old round burs to his laboratory lathe upon which is mounted a true stone and grind them down to about one-half the depth of bur he will find he has a splendid cutting inverted cone bur, which, when it becomes dull, can be sharpened in a minute by regrinding a little. These burs are fine for removing amalgam fillings, opening up and extending fissures, as well as for obtaining retention for fillings. The grinding should be carefully done so as to have the surface ground flat and at right angles to the shaft. It will take but a few minutes to try this and you will be pleased with the result.—*Review.*

## GOLD OUTLAY FILLING.

**W. G. Browne.**

Take a large cavity in left central incisor distal surface, extending from the gum margin to near the cutting edge, the palatal wall is generally gone, if not cut it away for it will be found with only enamel wall, obtain such separation as is usual, remove decay from tooth, make no retaining points or conditions, take a sand-paper disk and smooth, to such degree as is convenient, make the labial edge straight, cutting it if possible so that when gold is put in position it will come flush with tooth at cervical margin, now cut a small wire piece of pure gold and coil it around a small mandrel of suitable size to correspond with size of cavity. Solder it on to a piece of pure gold plate No. 30, somewhat larger than the margins of the cavity, now put it in position over the cavity, mark around on the gold so as to show approximately the size, remove and trim, replace and shape to margins, continuing to remove and trim till proper size is obtained, then bevel the margins of the gold to a feather edge, polish and cement in position, wedging it in with a wooden wedge while the cement is soft, at the same time burnish the margins to fit the tooth.—*Extract Dental World.*

## COMBINATION CEMENT AND GOLD.

**L. C. Taylor.**

My present method is to place a small quantity of cement in the cavity. If there is too much, press it to the surface over the edges of the cavity, but be sure and scrape the edges until there is not enough left to show. A slow-setting cement is preferable, as it gives ample time to pack the gold and will be more easily condensed under the mallet when welding up the gold. If the cavity is a large one, it is better to mix cement two or three times. When we begin to pack the gold into the cement, it is necessary to have two pluggers, one in each hand, as a slight rock of the gold will so loosen the cement as to spoil the filling.

Fillings started in this way will fill all undercuts, and we can be sure we have a water-tight filling, which is rarely obtained by gold alone.

This method is not adopted simply to stick the fillings, thus making it the lazy man's filling. It is much too complicated for that; it is designed to enable the honest, faithful practitioner to perform his operations so as to produce better results than he has been able to do in the past.

While all the walls of the cavity are protected by the cement, the major part of the filling is gold. On the surface, it has the appearance of an entire gold filling; but, best of all, we have a perfectly hygienic filling that will not discolor. Decay will not appear in a few months' time—greatly to the mortification of him who desires to be faithful.—*Extract Cosmos.*

## CAVITY VARNISH.

Dissolve some copal in equal parts of alcohol and chloroform; add one equal volume of hydro-napthol, and the product will be a very adhesive and strongly antiseptic varnish, free from all caustic properties.—*Stomatologist.*

## MANAGEMENT OF CAVITIES EXTENDING BELOW THE GUM.

**J. E. Nyman.**

I used to be worried by those compound cavities in molars and bicuspids which extended below the gum, involving the whole proximal wall, and which required separation of the teeth for proper operation. Now I simply remove the decay, break down the weak enamel walls and pack with gutta-percha, always instructing the patient to chew on that side. A month later I pack in more gutta-percha, and before long have the teeth sufficiently separated and the gum tissues crowded away from the gum margins. I first fill the gingival third of the cavity and then slide in a wooden wedge which does not impinge upon the septum. This maintains space while I put in the rest of the gold.—*Extract Digest.*

### CANADA BALSAM FOR SETTING PORCELAIN INLAYS.

**W. Booth Pearsall.**

Inlays set with Canada balsam, dissolved in benzole, are much more durably fixed in position than when imbedded in a film of oxyphosphate—provided an accurate fit has been obtained.—*Ash's Quarterly.*

### APPLICATION FOR PAINLESS REMOVAL OF PULP.

**Dr. Cormany.**

I have lately found that a combination of one-eighth of a grain of cocaine and one drop of carbolic acid applied to that pulp will enable me to remove it in five minutes without a particle of pain.—*Digest.*

### TO REMOVE PENDULOUS GUM TISSUE.

**C. P. Pruyn.**

You have all been troubled by the pendulous gum which is frequently found where a rubber plate has been worn a number of years. It generally extends from the second bicuspid on one side to the same tooth on the other, and is very annoying. In many cases we have found it necessary to remove this gum surgically, but there is another method of procedure. Place some oxyphosphate of zinc in the old plate, and crowd it into position while still soft. After this has been worn a few days, put in a little more cement, and by pressure you can remove all this tissue.—*Extract Digest.*

## CLASPING CUSPID TEETH.

**C. P. Pruyn.**

Dr. Pruyn applies the clasps from within outward instead of from behind forward. The clasps thus applied fit the tooth much better than otherwise.

## REPAIRING RUBBER PLATES.

**C. P. Pruyn.**

Suppose the plate has been broken straight through the center. My method is to wax the parts together, run plaster in the palatal portion and hold the form, then take the plate off and cut out all of the old rubber that presents to the tongue, cutting up underneath the shoulders of the teeth so that the pins are exposed, then pack in new rubber, and the repair will show only in a little place on the tuberosities just back of the molars on either side. In some cases where a plate has been worn for a number of years and some shrinkage has taken place, I scrape the cast considerably, and then by mounting with new rubber I can make a better and stronger case, and perhaps save the patient the necessity of getting a new plate for a number of years.—*Extract Digest.*

## SEPARATING RUBBER AS A WEDGE FOR TEETH.

**C. J. Sowle.**

The interproximtte space determines the size and thickness of the piece of rubber to be used. The matrix is placed in position and the separating rubber added. If the matrix fits tightly against the adjacent tooth, by putting a little vaseline in the rubber it can be stretched out and slipped between. It will force the matrix to place along the cervical margin, yet will yield enough to allow the filling material to cover the margin at every point. The rubber will spread the teeth enough that when you have built the filling down to the contact point, using a very thin matrix, you will have sufficient separation to give the tooth its natural contour. Now remove the matrix, leaving the rubber in place, finish the filling on buccal and lingual margins and contact point, remove the rubber and finish with strip to the cervical margin. I believe that separating rubber saves me at least half an hour on each operation.—*Extract Digest.*

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## A GOOD SEPARATING MEDIUM.

**G. E. Warren.**

I am indebted to Prof. Taft of the Chicago Art Institute for the formula of a preparation that is used in the Institute for separating plaster casts. It is what you might call a saturated solution of soap-suds. Strain it and add equal parts of lard oil. A little coloring may be used if desired. This preparation is simple and inexpensive and separates cleaner than anything I have ever used. In time the ingredients will separate a little and the bottle will have to be shaken.—*Digest.*

# SOCIETY

## RESOLUTIONS ON THE DEATH OF DR. J. B. KIRK.

At a called meeting of the Columbus Dental Society, the following resolutions were presented and adopted:

WHEREAS, For the first time in the history of this Society, death has entered our ranks and removed from us our associate, Dr. J. B. Kirk, and,

WHEREAS, As a charter member of this Society Dr. Kirk was identified with and assisted in its organization, and throughout its history has been an honored and respected member, upholding its traditions, and rendering valuable service for the accomplishment of its object, and,

WHEREAS, As one of the oldest practitioners of this city, the dental profession and the general public suffer a common loss, and,

WHEREAS, The ties of a happy home have been sundered and a devoted wife and son bereft of a loving husband and a father,

Therefore we, as members of the Columbus Dental Society acknowledge the will of the Heavenly Father in the presence of death, and express our sorrow at the loss of our most valued associate, and,

*Resolved,* That we extend to his family our warmest sympathy and testify to the esteem in which he was held among us, and,

*Resolved,* That a copy of these resolutions be recorded in the transactions of the Society, and copies be sent to his widow and son, and be published in THE DENTAL SUMMARY.

C. A. HAWLEY,
H. C. BROWN,
H. M. SEMANS,
*Committee.*

## CENTRAL MICHIGAN DENTAL ASSOCIATION.

The Central Michigan Dental Association will hold its next meeting in Grand Ledge, Mich., May 13-14. There will be special features at the banquet and an interesting program is assured. Arrange to attend.

Remember, at Grand Ledge, Mich, May 13 and 14.

P. L. **Cambell**, *Sec'y,*
Ionia, Mich.

## KENTUCKY STATE DENTAL SOCIETY.

The next meeting of this society will be held in Bowling Green, Ky., May 19, 20, 21. Members of the profession cordially invited.

C. R. **Shacklette**, *Sec'y.*

## SOUTHWESTERN MICHIGAN DENTAL SOCIETY.

The next meeting will be held at Albion, Mich., April 7 and 8, 1903.

C. W. **Johnson**, *Sec'y.*

## NEW YORK STATE DENTAL SOCIETY.

The New York State Dental Society will be held in Albany, N. Y., May 12, 13, 14, 1903.

## LAKE ERIE DENTAL SOCIETY.

The annual meeting of the Lake Erie Dental Society will be held at Cambridge Springs, Pa., May 19, 20, 21, 1903. A splendid program has been prepared and a profitable meeting expected. Members of the profession welcome.

C. D. **Elliott**, *Sec'y.*

## NORTHERN OHIO DENTAL SOCIETY.

The forty-fourth annual meeting of this society will be held in Cleveland, Ohio, June 2, 3, 4, '03. A special invitation is extended to the profession.

W. T. Jackman, *Cor. Sec'y.*

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## INDIANA STATE DENTAL ASSOCIATION.

The forty-fifth annual meeting of the Indiana State Dental Association will be held at Indianapolis, June 30, July 1 and 2, 1903.

Indiana dentists will heartily welcome professional gentlemen from other states. F. R. McClanahan, *Sec'y.*

# AFTERMATH

## PERSONAL AND MISCELLANY.

Will Represent the United States at International Medical Congress:—Dr. A. W. Harlan and Dr. T. W. Brophy, of Chicago, will, upon the recommendation of Senator Cullom, represent the United States at the fourteenth annual international medical conference to be held at Madrid in April.

Dr. J. P. Nesbitt, Waynesburg, Pa., is dead.

Dr. F. J. Shea, Chicago, was declared insane February 12 and sent to Kankakee. He tried to kill his brother with a butcher-knife.

Loss by Fire:—Dr. F. H. Coulter, Oklahoma City, sustained a loss of $1,200 by fire February 4.

C. E. Williams, Bartley, Neb., died February 5, of pneumonia.

Married:—Dr. E. W. Ryan, Burr Oak, Mich., was married February 18, to Miss Lottie Morrill.

Died from Injuries:—Dr. S. G. Groves, Cedar Rapids, Ia., died February 23, from injuries sustained at a fire in that city.

Dr. A. W. Morrill has left E. Tawas, Mich., and will locate in Oscoda.

Retired from Practice:—Dr. S. B. Palmer, who has practiced for thirty-nine years in Rochester, N. Y., has retired from active practice.

Committed Suicide:—O. G. Pepper, a dental student in the University of Michigan, committed suicide by shooting himself February 17. Pepper had read on the subject of suicide until he had become a monomaniac.

Died:—Dr. N. J. Dickerson, Brooklyn, N. Y., died of heart disease March 2. He was 65 years of age and a native of Ohio.

Dr. M. L. Spencer has moved from Waverly to Mitchell, S. D.

Died in Prison:—Dr. M. R. Griswold, Hartford, Conn., died of uremia at the State prison March 2. He was sentenced for ten years for arson and had served since 1895.

DIED:—Dr. J. G. Dimoush, Kansas City, Mo., died March 1. He was 37 years of age.

STRICKEN:—Dr. Bull, of Winfield, Kan., suffered a stroke of paralysis March 1.

DR. J. R. COLE, of Pomeroy, O., has located in Salem, O., succeeding Dr. H. E. Phillips.

RETIRES FROM PRACTICE:—Dr. C. H. Verbeck, Freeport, Ill., will retire from active practice on May 1. Dr. S. Neidag will succeed him.

SUES A FRATERNITY FOR $50,000:—Dr. W. C. Sensibaugh, a dentist of Port Byron, Ill., has sued the Fraternal Tribunes for $50,000 for disability claimed to have been inflicted on him by reason of "the goat" having used electricity too freely.

C. S. IRWIN, formerly of Elsberry, Mo., is now located in Vancouver, Wash.

DIED FROM TOOTH EXTRACTION:—W. H. Fennel, of Shell Rock, Ia., died February 19, from hemorrhage following the extraction of a tooth. Age 20 years.

RICHMOND DENTAL SOCIETY:—A new dental society has been organized at Richmond, Ind., and Dr. J. W. Joy was elected its president.

XI PSI PHI DENTAL FRATERNITY held its annual meeting in Chicago, February 17, electing supreme chapter officers as follows: President, Dr. George Brown, Glen Falls, N. Y.; vice-presidents, Dr. W. J. Montgomery, Dr. M. C. Schuler, Chicago; secretary and treasurer, Dr. C. C. Markey, Chicago. The next annual meeting will be held in St. Louis.

A GANG OF DENTAL-OFFICE THIEVES:—What is thought to be an organized gang of thieves who make a specialty of stealing gold from dentists' offices and rifling telephone boxes have been busy in Milwaukee during the past week. The offices of Drs. E. J. Eisen and W. J. Classen in the Goldsmith building were visited Friday night and $12 in cash, as well as a quantity of gold leaf was taken. Within the past few days the offices of Dr. E. P. Taugher, 1408 State street; Dr. William Nolte, Third and Chestnut streets, and Dr. J. H. Pendergast on Grand avenue have also been visited.—*Free Press, February 18.*

AN AMERICAN DENTIST BANISHED FROM SAXONY:—L. A. Obrien, an American dentist, has been ordered to leave the kingdom on account of his supposed relations with the former Princess Louise. He sails with his wife and four children for America Thursday.

ARRESTED FOR PRACTICING MEDICINE WITHOUT A LICENSE:—Louis F. Tauvar, a dentist, of Marinette, Wis., was arrested on a charge of practicing medicine without a license. An 18-months-old child of Annie Paschek, a domestic employed by him, died under his care Wednesday morning after being carried through the streets by the mother. Tauver signed a burial permit and the matter was thus brought to the attention of the health authorities.

First Woman in Germany to Pass Examination to Practice Dentistry:—Fraulein Freudenheim, of Konigsberg, has passed the state examination at Breslau university. She is the first woman in Germany to take the examination for practical dentistry.

Dentistry in Alaska:—

The wild wind blew o'er the Klondike vale,
Biting and blustering, fierce and cold.
The dentist smiled as he viewed the gale—
"The teeth of the storm have been filled with gold."

—*Judge.*

Too Learned:—A dentist in a neighboring town, with the thought to improve his reputation as an expert in his profession, made the announcement that he had become so familiar with the idiosyncrasies of teeth that he could tell from them, to a nicety, the age of all his patients. From that day on none frequented his dental parlors save men.—*Burlington Gazette.*

Teeth are Venerated:—Teeth of all kinds have been worshiped and are, in fact, venerated as relics in some religious shrines. Buddha's tooth is preserved in an Indian temple, the Cingalese worship the tooth of a monkey, while the elephant's and shark's tooth serve a similar purpose among the Malabar and Tonga islanders respectively. The Siamese were formerly the possessors of the tooth of a sacred monkey, which they valued very highly, but in a war with the Portuguese they lost the holy grinder and had to pay $3,500,000 to get it back again. It is now kept in a small gold box inclosed in six other boxes in one of the many temples of the Siamese capital.

A Dentist Brings Suit for Damages:—Dr. C. W. Correll, a dentist of Kansas City, who was injured in a wreck on the Rock Island at Herington, Kas., a few months ago, is bringing large suits for damages. His petition alleges that his spine was injured.

The DeMoines College of Dental Surgery became affiliated with Drake University, February 11.

Apple-wood Teeth:—Farmer Pooley O'Neal is using a set of false teeth he made himself out of a piece of seasoned apple-tree root with no other tool than his pocket knife. The teeth are of perfect shape and regularity, and the plate, which is of the same piece of wood, fits his mouth as well as if fashioned by a plaster impression. He can crack corn with these teeth.—*Chicago Inter-Ocean.*

A Woman Extracts Her Own Teeth:—Mrs. A. J. Slater, of Endicott, Va., has been a great sufferer from her teeth, and recently in order to obtain relief, she resolved to do or die. Her husband had a pair of old forceps. She got these and pulled out her entire set of upper teeth, both good and bad. She is doing well now and enjoys the relief she so longed for. Mrs. Slater is well known in society. She is in good spirits and will have a new set of teeth put in as soon as practicable.

Court Holds that Dentist Must be Paid:—Dr. F. H. Wallace, a dentist, of Chicago, secured an affirmation in the appellate court of the judgment awarded him in the superior court in the suit brought by him against

Andrew Winklebleck. It appeared from the evidence that Dr. Wallace had done work for Winklebleck and his wife. Winklebleck paid his own bill, but refused to pay his wife's on the ground that she had agreed to pay her own bills. Dr. Wallace testified that he was told of this arrangement after all the work had been done.—*Chicago Chronicle.*

ANNUAL BANQUET:—The Central Dental Association of northern New Jersey held its twenty-third annual banquet in Elizabeth, N. J., February 17. Officers for the ensuing year are: President, Dr. William H. Pruden, of Paterson; vice-president, Dr. C. W. Hozlitzell, of Jersey City; secretary, Dr. Fred W. Stevens, of Newark; treasurer, Dr. Charles A. Meeker, of Newark.

GAVE A CLINIC ON HIS PATENTED METHOD:—Dr. J. P. Carmichael has returned from a visit of six weeks in New York and Hartford, Conn. During his absence he attended the annual meeting of the New York Odontological society and gave a clinic on his patented method of attaching crown teeth.—*Milwaukee Evening Wisconsin, February 26.*

DENTAL INSPECTION IN GERMANY:—The question of engaging a special staff of dentists to examine periodically the teeth of the children in the primary schools in Berlin is occupying the attention of the authorities. Dental inspection has been already introduced into the schools at Gleiwitz. It takes place once a year.

A MAD MAN THINKS HIMSELF A DENTIST:—A madman of the name of Johnson ran amuck in the streets of Duluth, Minn., March 4. In the early morning he started in by pulling the teeth of four men who were found intoxicated in a saloon. An hour later he accosted an old man on the street, knocked him down, and pulled two teeth. Fifteen minutes later he entered the residence of Mrs. Ellison, knocked her down, and extracted two teeth. The police in the meantime had been called and arrested him. The man said he was a dentist, and when he was asked to show his license produced a contract to saw wood. He appears sane, but his actions indicate that he is mad.

THE TOOTHACHE DODGE:—Toothache patients and the disappearance of articles of value from the offices of Whiting, Hammond and South Chicago dentists have come so close together of late as to result in the issuance of orders for the arrest of a well-dressed visitor at the office of Dr. A. A. Young two days ago. In the capture the police believe the operations of an organized gang will be exposed. When the suspect entered his office Dr. Young thought he acted suspiciously. The dentist examined his téeth, reported on their condition, and the prospective patient left with the assurance that he would return the next day. The promise was kept, but early in the morning before the dentist arrived at his office. The man obtained entrance by the use of skeleton keys and property to the value of $150 was taken. Dr. Young compared the description of the suspect with that furnished by several other dentists who had been victimized, and it was found that a man of like description had made visits to their offices preceding the various thefts.—*Inter-Ocean.*

American Dentists Excel:—"American women have the most beautiful teeth in the world," said an Englishman to the *Philadelphia Record*. "I didn't know why this was till I came over here. Now I know well. It is because your American dentists excel those of any other country. On the other side it is either fill a tooth or pull it out, and more often it is pull it. They don't resort, as your dentists do, to gold crowns and porcelain crowns and all those other fine devices. They don't even resort, as a rule, to bridge-work. If you want a false tooth over there you have got to wear a plate in your mouth. I have myself three front teeth that an English dentist told me should come out. 'They're too far gone,' said he, 'for treatment.' An American dentist filled two of them and crowned the third, so that they are all now as good as new. Dr. Evans, of Philadelphia, made the success he did in Paris because he had no worthy rivals there. Evans was a good dentist, but no better, I have been informed, than the average American dentist. Here in the United States, had he remained here, he wouldn't have acquired such fame so easily."

New Dental Board Member:—Dr. M. Gist Sykes of Ellicott City has been appointed a member of the Maryland State Dental Board in place of the late Dr. Nelson.

Dr. Kirk Honored:—On January 28 the honorary degree of Sc. D. was bestowed upon Dr. E. C. Kirk, of Philadelphia, by the Northwestern University of Chicago.

A Dentist's Talk Is Not Cheap Talk:

| | |
|---|---|
| 1 gold crown | $10 |
| 20 minutes' conversation | 5 |
| 1 filling | 4 |
| 15 minutes' conversation | 4 |

The foregoing is a reproduction of a bill actually rendered one of Baltimore's well-known young society girls some time ago by a prominent dentist, and furthermore, it has been paid. Whether Miss —— ever intends to speak to the dentist again is what Kipling would call "another story." This young lady had occasion to go to the dentist some time ago and was much flattered when, after the busy man had put a gold crown in place, he talked to her upon various topics of the day for 20 minutes. She was more flattered when the same thing happened after he had filled one of her teeth, but when the bill came, as above, she was, of course, justly outraged, and sought out the wicked man. He explained, to her intense disgust, that he had merely talked to her for the periods mentioned to quiet her nerves between the dental operations, and that, as he was a very busy man, his conversation was worth at the rate of $15 an hour.—*Baltimore News.*

Odontographic Society Officers:—At the annual meeting of the Odontographic Society of Chicago, the following officers were elected for 1903: President, F. B. Noyes; vice-president, J. P. Buckley; secretary, F. H. Zinn, 100 State street; treasurer, G. N. West. Board of Directors: F. E. Roach, L. O. Green, H. A. Drake. Board of Censors: D. M. Cattell, W. Girling, D. A. Hare.

**Did Not Commit Suicide**:—The New York papers stated that W. J. Smyth, M. D. S., L. D. S., committed suicide, Thursday, January 29th. Having been associated with Dr. Smyth for a number of years, I have known him a good Christian. Dr. Smyth died of heart failure. I wish to express my thanks to S. S. White, the Dentists' Supply Co., Ritter, Horace Jones, Dental Manufacturers for their kind financial aid in assisting me to bury Dr. W. J. Smyth. He had no other friends or relatives in this country.—*H. J. Janilusz.*

**The Oldest Dentist in the World**:—Otis Avery, of Honesdale, is 95 years old and is the oldest practising dentist in the world, according to statements in medical journals. He maintains the office and operates in the in the office which he opened 70 years ago, and has a large practise. He can pull an aching molar as easily as the young graduate. He acquired his early knowledge of dentistry by self-study, but took a post-graduate course after returning from the war, at the University of Pennsylvania. He has also served in the State legislature. The position of honorary president of the Susquehanna Dental Society he has held for several years, and he has been a contributor of valuable papers at the annual conventions. Avery is also the only living man who rode on the first trip of the "Stourbridge Lion," the first steam locomotive to turn a wheel in America, which had its trial trip here August 8, 1829.

**What They Say of a Clumsy Dentist**:—The Ameriican authorities recently refused to allow a German emigrant to land because he was "too ugly." They maintained that with such features he would never find work in the United States. Kormoud, the man in question, says a Munich paper, has just returned to Munich. His features were distorted twenty years ago by a clumsy dentist, who was pulling one of his teeth.—*The Scotsman.*

**Dr. Evans' Will Contest Is Ended**:—By a decision of the New York Supreme Court March 10, Philadelphia gets the New York property of the late Dr. Thomas W. Evans, who died in Paris, leaving the bulk of his fortune, amounting to $4,000,000, to this city for the purpose of establishing a museum and dental institute. Dr. Evans left three wills, and when the documents were offered for probate here they were contested by the heirs and the case was taken to the higher courts. Suits wre instituted by the heirs in Paris, New York and Philadelphia. A compromise was effected between this city and the heirs, who demanded, however, a division of the testator's property in New York, claiming a vested interest. This city opposed this suit and was upheld by the New York Supreme Court.

**Died**:—Dr. J. B. Kirk, for forty years a resident of Columbus, O., and one of its leading dentists, died February 25, of pneumonia. Age 65. A widow and son, Dr. Harvey M. Kirk, survive him.

**Prof. John Uri Lloyd's Famous Satires**, the first of which, "The Mother of Sam Hill's Wife's Sister," was published in the September *Criterion* (1901), are resumed in the January number with the fourth paper of the series, "Sam Hill, Sheriff of Knowlton, Kaintuck," and purport to be related by "Chinnie Bill Smith," the famous story-teller of "Stringtown on the Pike." These satires, written exclusively for the *Criterion*, will be illustrated by Martin Justice, whose character studies are second to none in the magazine field. Prof. Lloyd's inimitable style and daring, yet kindly humor, will be a rare treat to *Criterion* readers. A deeper meaning will be read between the lines of these unusual papers by thoughtful minds. The next paper, "Why a Kentuckian Stands With His Back to the Stove, the Testing of Milinda," by Sam Hill, will appear in the March *Criterion*, and the remaining stories during the year 1903.

Novel Remedy for Neuralgia:—Naegeli announces that he has frequently caused almost immediate cessation of cephalalgia and facial neuralgia, as well as forms of long-continued odontalgia, by simply elevating the larynx, holding it well upward for sixty or seventy seconds. This frequently requires to be repeated several times, but quite as frequently one single attempt will prove successful.—*Public Health Journal.*

Adulteration of Cassia Oil:—Among the adulterations of cassia oil that have been noted are cedar-wood oil to the extent of 30 per cent, resin and alcohol. An oil containing 10 per cent of alcohol had a sp. gr. of 1.037. Such an oil would naturally yield inaccurate results when assayed by the acid sulphite method. A mixture of the proper proportions of petroleum and resin has been found to leave the oil soluble in 80 per cent alcohol, without materially changing the sp. gr. of the oil.—*Pharm. Review.*

Everybody Pleased With The Dental Summary:—Dr. D. F. McGraw, San Jose, Cal., writes as follows: Dear Doctor—"I entered my subscription this year for the first time for The Dental Summary, making my tenth journal. Permit me to say that the January number is a cracker-jack. If all of the succeeding numbers approximate this one in interest, I do not see how it is possible for any dentist in the world to get along without it. A porcelain worker of several years' experience, as I am, can thoroughly appreciate this number, for it is replete with good things. Success to you."

Dr. J. Allen Osmun, Newark, N. J., writes: Dear Doctor:—"I want to say to you that the January number, '03, of The Dental Summary is fine and just my idea of what a dental journal should be. I enclose check for the present year's subscription, and beg that you will continue to forward The Summary to me and not allow by subscription to lapse. We must have The Summary."

Dr. J. E. Freeston & Son, Pottsville, Pa., write:—"Please find enclosed check for one year's subscription to The Dental Summary. It is a welcome visitor to our sanctum."

Dr. T. Allen, Alliance, Neb., writes:—"The Dental Summary is a splendid dental journal full of good things."

These are but a few of the many kind expressions for The Dental Summary that are being constantly received.

# DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

## EMPYEMA OF THE ANTRUM CAUSED BY A LATERAL INCISOR.

BY H. L. AMBLER, M. D., D. D. S., CLEVELAND, OHIO.

Professor of Operative Dentistry and Oral Hygiene, Dental College, Western Reserve University.

On June 18th, 1901, Mr. ——— presented with upper left lateral incisor abscessed. Some days before the abscess had been lanced on the labial surface of the gingiva and a small amount of pus was evacuated, but the pus-cavity filled up again, and when a layman tried to open it, the patient noticed that pus came out through the left nares.

The tissues were very much swollen and of a bluish-purple color, and pressed the lip up against the alæ of the nose. An artificial crown had been placed on this incisor root about nine months previous and there had not been any trouble until the present time.

Treatment was commenced by injecting three per cent pyrozone and packing the cavity with antiseptic gauze, and glycothymoline was used as a douche for the nares. This was continued for a few days and some improvement was made, and then the patient gave some history of the case as related above, and showed that he could blow thick yellow pus from the left nares. Empyema of the antrum being suspected, the room was darkened by lowering the shades to the bottom of the windows, then a small black screen was held immediately in front of the patient's face, and a four candle power electric lamp was placed in the mouth and the lips closed, when it was plainly visible that the area under the left eye was darker than under the right, thus confirming the diagnosis of empyema.

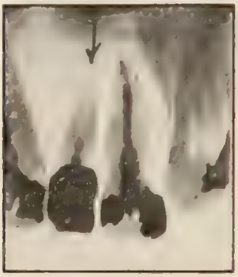


FIG. 1

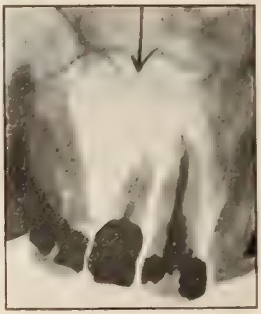


FIG. 2

FIG. 1.—Imperfect Root-Filling and Absorption. FIG. 2—Showing the Extent of the Abscess.

A radiograph was taken, and it showed that the external plate of the alveolar process had been resorbed, and that the pus-cavity was very large and involved the adjoining central and cuspid, and that the antrum (which was rather unusual) extended to the cuspid; it also showed that the root of the lateral had a sharp distal curve, and that the post which held the artificial lateral incisor crown, extended only about one-third of the length of the root-canal, and that the remainder of the canal was not filled; thus we have good evidence that here was the cause of infection and the primary seat of all of the disease.

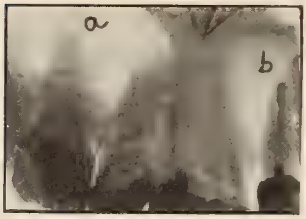


FIG. 3

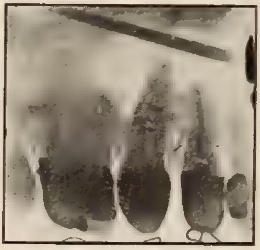


FIG. 4

FIG. 3—Showing Relation of the Abscess to the Antrum. FIG. 4—Shows an Instrument placed through Fistula over Lateral and into the Antrum.

Believing that there was a sinus from the pus-cavity into the antrum, and that the pus discharged from the nose came from the antrum, a probe was inserted into the gingival opening over the apex of the lateral incisor and directed upward and backward at an angle of about forty-five degrees; thus the sinus was traced and the opening into the antrum found. Septic infection of the antrum had been caused by the abscessed incisor. Through this sinus the antrum was injected by using a syringe with a long straight nozzle filled with glycothymoline, one to ten of warm distilled water. The antrum was flooded so that the medicament came out through the ostium-maxilla; and this was continued once a day.

June 23rd.—The discharge from the nares had materially decreased, and the patient had not been obliged to use a napkin during the night to clean the nares from pus, as he was obliged to before this time. It was decided to extract and replant, but before so doing a band was fitted to the artificial crown of the lateral, and adjoining central, then these bands were soldered together; this appliance to be cemented on after replanting, for the purpose of holding the lateral until it became firm in its socket.

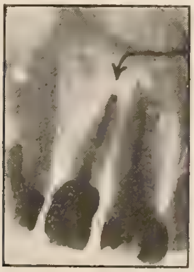


FIG. 5

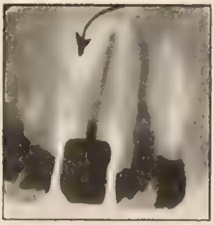


FIG. 6.

FIG. 5—Shows Root Filled. FIG. 6—Amount of Deficiency of Bone, 15 Months after Operation and Treatment. Cure Apparently Complete.

June 25th.—The root with the artificial crown was carefully extracted, and it was found that the root was denuded of pericementum, except for about one-eighth of an inch of its circumference at the cervical portion, and that the foramen, though small, was open, and the radiograph was justified, because a small broach could be passed through the foramen along the canal about two-thirds of the way until it touched the metal post of the crown. There was a very slight resorption at the apex of the root.

That portion of the root which included the distal curve, was filed off; the canal from apex to crown-post reamed out, sterilized, and filled with gutta-percha; tooth-socket freed from coagulum, sterilized and tooth replanted; rubber cloth adjusted and bands cemented onto it and adjoining central. The patient stated that the root-canal was formally filled with paraffin, but if so it had entirely disappeared. While the tooth was out of the mouth, it was wrapped in gauze saturated with warm glycothymoline, one to ten of sterilized water

June 26th.—Syringed pus-cavity around root, and also antrum, with pyrozone three per cent. Slight show of pus. Patient said discharge was so slight he was not troubled with it. Tissues about replanted tooth were not sore enough to cause any discomfort. All operations and treatment were made without using any local or general anesthetic, as the patient had great fortitude, and so desired.

June 27th.—Only a few drops of bloody pus. Syringed with three per cent pyrozone. Patient using glycothymoline for douche and as local application.

June 28th.—Slight show of bloody pus and serum. Syringed with pyrozone. Very little inflammation in tissues around replanted tooth.

June 29th.—Slight show of serum. Syringed with glycothycoline, one to ten in warm sterilize water.

July 1st.—(Two days elapsed.) Condition the same. Patient said that once in twenty-four hours they could get a slight amount of serum from the nares. Replanted tooth and tissues doing well; no soreness.

July 2nd.—Slight show of exudate; injected glycothymoline into antrum and cavity around roots of central, lateral, and cuspid; in fact, the antrum could not be injected without injecting the cavity around the roots. Packed cavity at apex of lateral with antiseptic gauze, letting the end project slightly from the opening. Patient said the disease was causing him no inconvenience.

July 5th.—(Three days elapsed.) No pus or serum from nares. Opening from old abscess-cavity into antrum closed up. Opened with a probe and injected glycothymoline.

July 6th.—Condition of antrum the same. Treatment the same. Packed cavity at apex of root with antiseptic gauze.

July 8th.—Condition and treatment the same.

July 10th.—As a final test for pus, injected three per cent pyrozone, one to ten in warm sterilized water, and then allowed the opening into the antrum to close.

July 14th.—A drop of bloody pus at apex of lateral; used three per cent pyrozone.

July 20th.—Slight show of serum, plastic exudate; same treatment.

July 22nd.—Patient left the city, taking a small Dunn syringe with which he injected the abscess-cavity around roots of teeth every day, using three per cent pyrozone. He continued this for about two weeks, when they allowed the opening to sinus to close. They said that sometimes the opening would close in twenty-four hours, and several times they were obliged to reopen it before they could enter the syringe nozzle.

August 20th.—(28 days elapsed.) Saw patient. Abscess healed; tissues nearly a normal color; bands still on central and lateral.

October 12th.—Bands still on; case seemed cured.

December 19th.—Bands on lateral partly broken off. Radiograph taken showed that the large resorption-pocket at apex of roots was about two-thirds of its original size. No return of disease; from an objective examination it is very doubtful if any one could tell there had ever been any disease.

March 26th, 1902.—Band still on; no return of trouble; gingiva normal color.

May 10th.—Removed bands; lateral incisor firm in socket.

Comparing radiograph No. 2 with No. 6, it is shown that the original pus-pocket has been nearly filled with new tissue.

# DENTISTRY WITH MEDICINE.

BY W. B. FULTON, BIRMINGHAM, ALA.

Professor of Prosthetic Dentistry and Metallurgy, Birmingham Dental College.

I am not given to arguing which is the more noble science or lofty profession, dentistry or medicine, for there is glory and honor enough for all in either, and both are yet unlimited fields for exploration. Yet there are often times when the dentist and doctor of medicine should be in close touch, and dentists should cultivate the close friendship of medical doctors, and through this channel educate them to the fact that, and I say it in all due respect to their profession, the majority of practising physicians, after reduction of fractures of the maxillæ are little capable of forming the proper splint to retain it in position. I do not deem it essential for dentists, for practical purposes, to obtain the degree in medicine, and as for the physicians graduating in dentistry, I consider it time uselessly spent. As an accomplishment and from an educational standpoint, I think that a dentist should be a graduate in medicine, but I consider this time spent in dentistry alone far more beneficial. The common saying, "every man to his trade," explains more fully my position. As has been said, "an educated man is one who knows all about one thing, and something about everything." A dentist should know all about dentistry, and something about medicine. As evidence of my assertion, I wish to submit the following cases:

In one of our suburbs, a Mr. M. was returning from his daily labors on a wheel, and coming in contact very forcibly with a gentleman of color going in the opposite direction on a wheel, was thrown violently to the ground. On consulting his physician, although there was considerable swelling and marked crepitus, a mouth-wash only was prescribed, and a very favorable prognosis given. The pain growing more intense and no improvement, he consulted us, and on examination, the lower maxilla was found to be fractured on the left side between the first and second biscuspids. A thick, flat piece of tin was cut out with the scissors to fit over the teeth, then an impression of both upper and lower jaws was taken, and the lower maxilla was sawed out at the position of the fracture and placed in the normal position on the articulator. Then a softened roll of modelling compound was placed around the piece of tin and pressed down on the lower teeth in the articulator. Then another softened roll of modelling compound was placed on the upper surface of the tin, and the plaster teeth in the upper model on the articulator was closed into this, thus taking a normal impression and bite at the same time. After becoming hard, this was removed from the articulator, trimmed up smoothly, and the indentations of the lower teeth filled with plaster and invested in the lower half of the flask. After plaster had hardened, the upper part of flask was poured, separated and packed as in a usual vulcanite case. After vulcanizing, a small space was cut out in the median line of the splint, through which nourishment could be taken. The splint was then placed in position in the mouth and the jaws held in position by a Barton bandage. After three weeks' time the patient was dismissed, the occlusion being perfect.

Mr. J. had a misunderstanding with an Italian, whereupon the Italian struck him a knock-out blow under the chin on the left side, fracturing the lower maxilla between the second biscuspid and the first molar. His physicians proceeded to wire the teeth together, and after ten days of suffering he was sent to one of our hospitals with a suppurating jaw. I was called, and first tried the splint made by Dr. Freeman, of Nashville, but found the wires lacerated the lips, so I made another splint as in the case of Mr. M., and held it in position with a Barton bandage. The surgeon made an opening on the inner side of the maxilla and drained the pus externally.

Mr. S. was climbing for chestnuts, and mistaking a decayed limb for a sound one, was precipitated to the ground, fracturing his lower maxilla on the right side between the first and second molars. This case was also treated by a physician, and after six weeks' treatment suppurated, and discharged through a fistula on the outside of the face. An open incision was made in this case and the necrosed bones were trimmed off and drawn together with a silver plate, boring holes through the maxilla with a large drill in the dental engine.

I might enumerate other cases, but all tend to show the position I have taken in this short paper. One case came to us in which union had taken place and the occlusion was almost an inch out of position.

# A HIGHER ESTIMATION OF DENTISTRY REQUIRED.

BY W. T. M'LEAN, M. D., D. D. S., CINCINNATI, OHIO.

Professor of Oral Hygiene and Dental Ethics, Cincinnati College of Dental Surgery.

A movement should be encouraged by our profession to enlighten the laity upon the usefulness and great progress of dentistry in the past decade, so that the dentist would be sufficiently appreciated when he did only first-class service. What the dental profession is suffering from most, is the low estimate dentists place upon themselves, and their service to patrons. I have often been amazed at the careless manner in which operations upon the teeth have been made when I have been consulted regarding inefficient service, and incidentally learned of the small charges made for such service—more, it is true, than the service was worth—I was nevertheless astounded. It is no wonder we are not esteemed as members of other professions are. Dentists' advertisements are placed side by side with theatre posters and cigar signs upon large walls built for the purpose of attracting patrons—or victims, as you please.

Personally, I have no complaint; I may not be particular, but I can see between the lines, when enjoying myself socially, the manner in which dentists are looked upon by their intellectual inferiors. A leading lawyer recently stated at a social gathering that there were so many strangers present he would like a formal introduction, to a few, at least. His wish was gladly complied with. Those with whom he was made acquainted happened to be three dentists, and after a few minutes' conversation with the dentists he addressed his host privately and remarked, "How did you happen to invite those gentlemen—I thought you enjoyed intellectual and congenial company only?"

Now these peculiarities of the conditions in our profession for the past few years are improving, but there is yet a great deal of improvement necessary, and the advance should be made,

First: By educating the laity, who are sooner or later, compelled to become patients of dentists, so that they may be able to appreciate scientific and skillful training of the dentist.

Second: By having dental science and skill remunerated sufficiently, so that the dentist can live like a professional gentleman, and be enabled to reserve a competency for old age.

Third: By the method of teaching in our colleges; a progressive change should be promulgated, the progress of the students should be closely watched and recorded, and if found not naturally adapted to the work, should be invited to discontinue.

Regarding the teaching of dentistry: There should be uniformity of subjects taught in fully equipped dental colleges, with equal time spent upon the subject regarding its importance, including system in method of teaching that will result in greater progress and lasting benefit, than with the old, worn-out didactic lecture system. In teaching students, dentistry with its varied departments (equaled by no other profession) can only be taught successfully by the student having close association with the teacher. Every subject taught should be fully described, illustrated where possible, and finally discussed, either by recitation or interrogation with each student individually, so that the teacher will actually be assured of the student's knowledge of the subject he teaches. By this relationship and method only can he understand the progress or shortcomings of the student.

I am amazed when I think of the very large classes in some of our colleges, and wonder how it is possible for each member of the teaching corps to become personally acquainted with each individual student's theoretical and practical operative advancement. I cannot perceive how one teacher can instruct more than forty pupils and fully convey to them knowledge which he may be assured is understood and retained, unless he knows each one personally.

Now that the four years' dental college course before graduation is near at hand, it may stimulate the powers that be, to classify the subjects and equalize the time for proper culture, and incidentally charge for tuition at least $200 a term, so that our competent teachers will be paid sufficiently for their time and labor. Our profession will then become esteemed by all the world, and American dentistry will occupy the place it merits among the other professions.

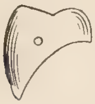
# REGULAR CONTRIBUTIONS

## METHOD OF USING PINLESS TEETH FOR DUMMIES.

BY M'FARRAN CROW, D. D. S., VERSAILLES, KY.

Select the tooth to be used (Fig. 1,) and place the curved surface on a piece of gold of about 30-gauge, bending the gold to fit the curve. With a sharp instrument outline the tooth on the gold and cut to the outline along the dotted line as shown in Fig. 2. Bend up the sides *a* and *b*, burnish closely to the tooth, then bend up sides *c* and *d* in like manner. Chip off the surplus corners, burnish all sides and corners well and smooth down the laps with a disc. A small particle of solder in each corner finishes the cup, (Fig. 3.) except for a pin or post in the center. Wax up, remove the porcelains, invest and solder the bridge and set the porcelains with cement or gutta-percha, before setting the bridge in the mouth.

1



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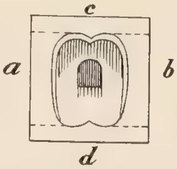

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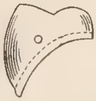

These cups may be made by swaging by any of the numerous crown systems and obtain the same results.

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# ANNEALING GOLD FOIL.*

BY J. R. CALLAHAN, D. D. S., CINCINNATI, OHIO.

Annealing the various forms of gold used for filling teeth, has become an interesting study to me.

In looking over the literature on this subject, I have been surprised at the brief and incomplete treatment given to this subject by all the authorities consulted, except by Dr. C. N. Johnson, who in following the teachings of Black and others, has at the same time added much that is important. To his chapter I hope to add a mite.

"We know that two pieces of perfectly pure and perfectly clean gold will weld cold. Two pieces of gold foil in this condition cannot be rubbed together without sticking."—(Dr. C. N. Johnson: Principles and Practice of Filling Teeth.)

If pure gold foil be exposed to the atmosphere for any length of time, or is brought in contact with certain gases, it gathers upon its surface an imperceptible film, which while not affecting the purity of the substance itself, interferes with its cohesion. To drive off this gas and thereby restore the cohesive properties of the gold, we resort to annealing. Ordinarily this is attempted by passing the gold through an alcohol or gas flame. It is well known that we seldom have a pure alcohol or gas flame. Frequently other or additional gas films are added to the gold surface, and the latter stage is worse than the former so far as cohesion is concerned. But even if we should have a pure flame it is almost impossible to pass the gold through it in a manner that will anneal all portions of strip or pellet, evenly. Consequently each layer of gold will have different cohesive properties. A serious difficulty will be found at the extreme ends of the strip where the gold is so often melted.

When it comes to annealing pellets or crystal gold, the flame is still more objectionable. A great improvement over the flame may be obtained by arranging a platinum tray over a flame and heating the gold thereon. The only perfect heat for annealing purposes is obtained by "electrically heating a mat of coiled platinum wire. This gives a clean, uniform and accurately controlled form of heat. Electric heat differs from all other forms of heat in that it is not itself a form of combustion. It does not consume and does not omit, but radiates a pure heat."—(Dr. L. E. Custer: *Dental Cosmos* for December, 1895.) So in the electric annealer we have an ideal heat for annealing purposes. This annealer, as prepared for the market, gives that degree of heat that is probably best adapted to light foils. I believe it would be a great improvement if with the assistance of a rheostat, the annealer were capable of giving a wider range in the intensity of the heat, an improvement that can easily be made.

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*Read before the Ohio State Dental Society, December, 1902.

All authorities with which I am acquainted speak of annealing gold as if the purifying of the surface was the sole purpose of heating the foil. To me this is not the only purpose or result.

The microscopic structure of pure gold shows well-refined, large crystals with sharp angles, the faces of which show different shades of color from yellow to almost black. This is probably due to the presence of small secondary crystals, apparently cubes and octahedra, for it is well known that gold crystallizes in the cubic system, being found native in this form.—(Matallography: by Arthur H. Hirons.)

If a metal naturally assumes a crystalline structure, the molecules which are the component parts of matter probably also assume a definite shape, and arrange themselves in contact with each other so as to form larger crystals of the same shape, and the slower and more uninterrupted the action, the larger will the crystals grow, and the more symmetrically will they arrange themselves in relation to each other. If a metal is submitted to pressure, not only will the individual crystals be distorted but the orderly arrangement of the whole mass will be disturbed, and when the pressure is carried to that extent, the metal becomes rigid, a state of unstable equilibrium being brought about, Now, in all probability the natural crystalline condition is the stable condition, and any deviation from this may be said to be unnatural. In such a case the molecules are ever tending to pass back again to the normal and more highly crystalline state, which is perfectly effected by remelting, and often in a great measure by annealing.

Gold, as prepared for filling purposes, comes to us in two forms, speaking broadly, in crystals and in foil. The crystal gold is a mass of minute crystals thrown down in an irregular mass by chemical means.

Foil is also a mass of crystals that have been brought together in a regular and compact or normal form by melting. This crystalline formation having been disturbed and distorted by hammering or rolling into foil. The crystals being partially re-adjusted at intervals by annealing. We have been in the habit of annealing all our gold in pretty much the same manner. That I believe to be an error which should be speedily remedied.

I believe that a little experience will show that the nearer the gold is to the normal crystalline condition, the less heat it needs, and the farther the gold is from the normal crystalline condition, the more protracted and the higher heat it will nead for perfect results.

This cannot be obtained except upon an electric annealer, with a high or low heat being, controlled by a rheostat.

Acting upon this belief, I have three of the electric annealers offered for sale at the dental supply houses. The first test was with thermometers. These were not satisfactory because above 600 degrees, the instrument did not behave well.

Through the courtesy of Dr. John F. Hammond of New York, I was able to use a Pyrometer—an instrument of great accuracy, with the following results. The annealers shall be known as A. B. and C. The readings were taken with the covers off, for the reason that the busy dentist has enough to bother him without stopping to remove a hot cover from the annealer every few minutes.

| A | | B | | C | |
|---|---|---|---|---|---|
| Minutes | Registered | Minutes | Registered | Minutes | Registered |
| 1 | 0° Fah. | 1 | 140° Fah. | 1 | 266° Fah. |
| 2 | 68° Fah. | 2 | 177° Fah. | 2 | 464° Fah. |
| 3 | 104° Fah. | 3 | 212° Fah. | 3 | 536° Fah. |
| 4 | 122° Fah. | 4 | 212° Fah. | 4 | 599° Fah. |
| 5 | 140° Fah. | 5 | 230° Fah. | 5 | 653° Fah. |
| 6 | 176° Fah. | 6 | 239° Fah. | 6 | 680° Fah. |
| 7 | 188° Fah. | 7 | 248° Fah. | 7 | 707° Fah. |
| 8 | 212° Fah. | 8 | 248° Fah. | 8 | 718° Fah. |
| 9 | 224° Fah. | 9 | 248° Fah. | 9 | 752° Fah. |
| 10 | 236° Fah. | 10 | 260° Fah. | 10 | 764° Fah. |

I will not claim these readings to be absolutely correct, from a strictly scientific standpoint, but they do show the correct relative heat-giving capacity of each instrument, and are near enough to scientific correctness for the purpose of this paper.

If the test be continued for fifteen minutes or longer, the annealers would show greater heat, but below the ten-minute mark, A. and B. showed such irregular action and owing to the limited time at my disposal the readings are given to the ten-minute limit. At this point they were all showing rather steady progress.

In daily practice we find that each brand of gold shows an individuality that is very marked. To develop to the maximum the cohesive properties of the various brands of gold, I beg to offer the following suggestions as to degree of heat and time of exposure:

Crystal gold about 400° for ½ minute.
Soft pellets about 500° for 2 or 3 minutes.

### HARD PELLETS.

Foil ribbons (No. 4-6) 600° for 3 or 5 minutes.
20 to 40 foils 800° for 5 or 15 minutes.
60 to 120 foils 1000° for 10 or 15 minutes.
No. 60 gold and platinum 1000° to 1200° for 10 to 20 minutes, or until the gold on the surface shows a crystalline surface.

These figures are given more to make clear the idea than to establish the exact degree of heat or time of exposure.

It will be seen that I prefer an annealer that will give a greater heat than any instrument on the market gives. I have in my office an annealer made for me by Dr. Custer that will fuse gold, this being controlled by a rheostat, enables me to get the greatest cohesion with any gold I desire to use, with this advantage, 120 foil or 60 platinum and gold filling can be packed with the same force of blow that is required for No. 4 foil, and produces a more perfect and substantial filling.

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## PRACTICAL SUGGESTIONS.

### BY L. W. JORDON, D. D. S., BINGHAM, MAINE.

On page 235 of the March DENTAL SUMMARY appears an article taken from the *American Dental Journal*, in which is recommended six ounces of aqua pura for tablet 81 dental cocaine hydrochlorate 1-2 grain; morphine sulphate, 1-8 grain; atropine sulphate, 1-200 grain.

It seems to me that there must be some mistake. I use this tablet and I use only a scant one dram aqua pura with a little Listerine (one ounce Listerine to one pint aqua dest.)

I have a little bottle that holds one dram and I turn in not quite one dram of the mixture of distilled water and Listerine with one tablet. I found that with a full dram of distilled water it was not always effective, so use a scant dram.

I keep my needle and hub in ethyl alcohol (spirits of wine) 95 per cent, but I think absolute alcohol would be better.

Before I inject the cocaine mixture, I paint the gum with campho-phenique, full strength, on a little cotton in the pliers, to prevent pushing septic matter into the gum with the needle. The campho-phenique aids in benumbing the gums and aids in the anesthesia.

I open up the syringe full length before screwing on hub and needle, and when screwed on, push back the plunger full length to blow out what alcohol there might be in the needle before filling the syringe with the anesthetic.

### DO NOT USE ZINC CHLORIDE ON A LIVE TOOTH.

I notice on page 233 that zinc chloride is recommended.

I agree with Dr. Taft, under whom I took part of my dental lectures, that zinc chloride should never be used in a live tooth if the pulp is to be saved alive.

For this reason I would never use it.

### ABANDONED ADRENALIN CHLORIDE AS A HEMOSTATIC.

I have used Adrenalin chloride and I have given up its use, as I use other remedies that I consider more effective and cost less. The best things I have found yet for hemorrhage after extraction, are Fletcher's carbolized resin on cotton and packed into the cavity and next to this, burnt alum on cotton packed into the cavity. I always remove before patient leaves the office. I never have yet had a case that these last two wouldn't control and I have had regular "bleeders," and after they have bled twenty-four hours steadily before they came to me after having tooth out.

### TO AVOID DARK JOINTS.

If you don't want any dark joints when sections are used, pack pink rubber against the joints. Let it extend at least one-eighth of an inch beyond the joint. Don't cover the pins. Pink rubber is cheaper than gold.

### AN INQUIRY.

I would like to inquire whether any readers of THE DENTAL SUMMARY know how to put a central, lateral, or cuspid, onto a plate, to take the place of one broken out, without vulcanizing the plate and have it as strong as if it was mended by vulcanizing?

# TEMPORARY AND PERMANENT FILLINGS AS BARRIERS TO BACTERIA.*

BY A. E. WEBSTER, M. D., D. D. S., L. D. S., TORONTO, CANADA.

The attention of the profession has never been called to the possibility of many fillings, both temporary and permanent, not being barriers to bacteria. The experiments here reported cover quite completely what are known as temporary fillings, such as sealings for dressings, etc., and to a limited extent root-canal fillings, and what are known as permanent fillings, cements and amalgams.

## TEMPORARY FILLINGS.

In discussing the question of temporary fillings used to seal dressings into root canals, it is taken for granted that the most desirable substance is that which will absolutely prevent the fluids of the mouth from getting into the canal under treatment, or the contents of the canal from escaping in the oral cavity. Of course the material which is the most easily manipulated is preferable if it has the above qualities. So that it may be positively shown that the materials used to seal dressings into teeth, or used to fill teeth and root canals, have or have not the power to prevent the passage of bacteria; the tests must be made in the laboratory. It would be wholly impossible to do accurate work in the mouth, because there are besides many other complicating conditions, certain vital influences which cannot be accurately foretold. But to prove the plain scientific fact as to whether bacteria can be dammed out of a root canal by cement or gutta-percha must be done in the laboratory. If all the conditions are made the same as those in the mouth except the vital, which is a variable one and cannot be depended upon in the treatment of any case, the results must be of practical value. The fillings used in these experiments were inserted as far as possible under the same conditions as those that exist in the mouth.

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*Read before the Fifteenth Anniversary Celebration of the Odontographic Society of Chicago, February, 1903.

Glass tubes, with a fourth-inch bore and about two inches long, sealed at one end and a slight constriction about a quarter of an inch from the other, were filled with bouillon, or beef broth, up to the constriction and the open end plugged with cotton. These were sterilized on three consecutive days. The cotton plug was then removed and the sealing or temporary filling inserted, using ordinary care and cleanliness. After the tubes were filled they were immediately immersed in a beaker of freshly collected saliva. The tubes were allowed to lie upon their sides so the bouillon might come in contact with the stopping. The breaker containing the tubes was placed in the incubator at 37C, and at the times stated in the following tables the tubes were taken from the saliva and examined as follows:

Sterile water was allowed to flow over them, they were then wiped dry and with a file the tubes were nicked at the neck and the end broken off with a blow from the file, thus exposing the bouillon. Three loopfuls of this bouillon were then spread upon agar, the test tubes containing the agar were placed in the incubator and examined at intervals until it was certain that no growth was likely to occur. Where a growth occurred it was in many cases stained, and examined under the high power of the microscope. Control tubes were carried through with many of these experiments. These tubes were put through the whole process except the immersion in the saliva. Thus if these tubes which were not put in the saliva were not infected, and those which were put in the saliva were infected, there is only one conclusion, and that is that they were infected from the saliva. Besides this a beaker of bouillon was infected with bacillus Pyoceaneous, which imparts a distinct green color to the media. Tubes immersed in the solution become infected with this organism.

A good deal is sometimes said about the advantages of one sealing material over another. So that a basis may be had for a conclusion on this point, and also to illustrate many others; below is a full report of series—D—where all the tubes were put into the same beaker of saliva at the same time and tests made of each variety at the same time.

### SERIES D.

Gutta-percha.

10 tubes put into saliva.

In 24 hours 2 tested, both infected.
In 48 hours 2 tested, both infected.
In 72 hours 6 tested, all infected.

Temporary stopping.

10 tubes put into saliva.

In 24 hours 2 tubes tested, both infected.
In 48 hours 2 tubes tested, both infected.
In 72 hours 6 tubes tested, all infected.

Oxyphosphate. (Weston's.)

10 tubes put into saliva.

In 24 hours 2 tested, both infected.
In 48 hours 2 tested, both infected.
In 72 hours 6 tested, all infected.

Cotton and Sandarac.

4 tubes put into saliva.

In 24 hours 3 tested, all infected.
In 48 hours 1 tested, and infected.

Oxychloride. (Ames.)

5 tubes put into saliva.

In 24 hours 2 tested, no infection.
In 48 hours 1 tested, no infection.
In 72 hours 1 tested, no infection.

One tube broken.

In other series oxychloride has resisted infection for 60 days. There is no reason for believing that it will not stand out a much longer time.

Vaseline mixed with cotton and whole covered with cement.

5 tubes put into saliva.

In 24 hours 1 tested, no infection.
In 48 hours 1 tested, and infected.
In 72 hours 3 tested, and infected.

To sum up—gutta-percha, temporary stopping, cement, cotton and sandarac, cotton, vaseline and cement, or gutta-percha, are of doubtful value to seal a cavity in a tooth to prevent infection from the oral cavity. A sealing that will not prevent the passage of bacteria for more than 24 hours cannot be depended upon, even if a disinfectant be sealed in the cavity, because most disinfectants sealed in the manner described soon become dissipated. Such a drug as carbolic acid sealed with one of the above sealings will lose its potency in from two to three days, and the cavity becomes infected. There are drugs, however, which will resist infection for weeks under such circumstances. Although the temporary filling materials mentioned may not have the power to prevent the passage of bacteria, they are not useless as sealings so long as the drug sealed in the cavity has the power to prevent bacteria from passing it to infect beyond.

It will be well to state at this time that all sealings of cotton or those containing cotton are objectionable, because they soon become saturated with saliva and food juices. They are really incubators. As they are squeezed in the act of mastication millions of bacteria are forced out to infect the alimentary tract, while more food juices are absorbed to renew the activity of the growth; besides this they allow the dissipation of the drug from the dressing and the reinfection of the cavity or root canal.

Oxychloride of zinc, which appears in series D, did not permit of the passage of bacteria. Nor has it permitted the passage of bacteria after being immersed in saliva for 60 days. From these experiments and many others it is clear that oxychloride of zinc is a safe sealing for all open cavities in teeth.

## PERMANENT FILLINGS.

It is to the second subject under discussion that attention is directed most particularly at this time. "Do amalgams, cements and gutta-percha, when used as permanent fillings or as root fillings, prevent the passage of bacteria?" Accurate technic was desired because these materials are used as mechanical plugs for cavities in teeth rather than depending upon any antiseptic quality the materials might possess. In most cases where a temporary filling leaks there is still the disinfectant dressing to overcome before infection may take place, but not so with a mechanical filling.

Being satisfied that the foregoing experiments had some bearing on mechanical root-canal fillings and cavity fillings, further experiments were undertaken.

### SERIES E.

Ten tubes were filled with bouillon, mouth plugged with cotton and sterilized three consecutive days. Cotton plug removed from neck, moistened with eucalyptus, then chloropercha pumped into constriction and a gutta-percha cone made to fit and forced home, not using much heat, the packing continued until the gutta-percha was perfectly cool. The remaining portion of the tube was filled with cement (Ash). About twenty minutes after the tubes were filled, nine were placed on their sides in a beaker of saliva, one held as a control, the tubes being completely covered. The beaker was placed in the incubator and tests made of the contents of the tubes as follows:

In 1 day 1 tested, no infection.
In 2 days 1 tested, no infection.
In 3 days 1 tested, no infection.
In 4 days 1 tested, infected.
In 5 days 1 tested, no infection.
In 7 days 1 tested, no infection.
In 9 days 1 tested, no infection.
In 14 days 1 tested, infected.
In 17 days 1 tested, infected.
In 17 days control tested, not infected.

Series E having shown a protective power for root-canal and crown fillings for only fourteen days, it was determined to insert some amalgam fillings, some cement fillings and also gutta-percha root fillings, covering them with cement and gutta-percha root fillings covered with a layer of oxychloride and then oxyphosphate over all, using the greatest possible care in their insertion, as to mechanical correctness and technical correctness from a bacteriological standpoint.

Heavy glass tubes two inches long and one-quarter of an inch bore were drawn to a fine neck about a quarter of an inch from the end, the remaining quarter of an inch was made into a cylindrical bowl with a solid rim and a flat base, the center of the base having a fine hole leading to the tube below.

The inside walls of the bowl were ground with a stone so that they became rough, similar to the walls of a recently prepared cavity in a tooth. Bowls were plugged with cotton and sterilized in dry air at 160C. for one hour, then filled almost to the constriction with bouillon. Cotton plugs replaced and tubes sterilized in live steam for 20 minutes on three consecutive days.

### FILLING BOWLS WITH AMALGAM.

Alloy, mercury, mortar and pestle, and instruments used in inserting fillings were sterilized in dry air at 160C for one hour; sterilizer was then allowed to cool to 37C. Thus the tubes, the instruments, the filling materials and saliva were all of the same temperature, 37C. The filling materials were mixed and placed in the bowls of the tubes in the sterilizer at body temperature and maintained at that temperature until tested for infection. In this way there could be no possible chance of error by an unequal expansion or contraction of the glass or the filling materials because of changes of temperature. Within ten minutes of the bowl being filled with the amalgam the tubes were immersed in the beaker of saliva. The beaker was then placed in the incubator, which was maintained at a uniform temperature, 37C. In all thirteen tubes were filled, ten put in the saliva and three control tubes put through all processes except being placed in the saliva. Some of the amalgam mixed was imbedded in agar and put in incubator. In no case were the material, instrument points, or contents of tubes touched with the hands. As far as possible every source of infection was guarded against.

### SERIES F.

13 tubes filled, 10 put into saliva.

In 7 days 2 tubes tested, 1 control, and 1 from saliva, neither infected.

In 16 days 1 tested, not infected.

In 39 days 1 tested, not infected.

In 47 days 1 tested, not infected.

In 52 days 1 tested, bouillon cloudy but no growth on agar.

In 61 days 1 tested, not infected.

In 66 days 1 tested, infected.

In 73 days 1 tested, infected.

The manner of testing or deciding whether an infection had occurred or not was the same as that previously described under temporary fillings.

### CEMENT TESTS.—SERIES G.

A test of Fellowship cement under the conditions aforementioned was made with the following result:

13 tubes filled.

10 tubes put into saliva, in 7 days 10 tested, 4 infected.

3 control tubes not put into saliva, 7 days, were not infected.

### SERIES H.—ASH CEMENT.

5 tubes filled.

4 put into saliva, in 8 days 4 tested, all infected.

Control not infected.

### SERIES I.—JUSTI CEMENT.

5 tubes filled.

4 put into saliva, in 8 days 4 tested, 1 infected.

Control not infected.

### ROOT FILLINGS.

The same heavy tubes were used in these experiments, only having the necks drawn out much longer, so as to make a fine root canal. All were filled under same conditions of care, etc., as preceding, canals lubricated with chloro-percha and gutta-percha cones forced home, using little heat and good pressure. There is a serious objection to heating gutta-percha very much when filling a canal. It greatly contracts on cooling. About a half hour after the canals were filled the bowl was filled with cement. As soon as the cement was set the tubes were placed in the saliva.

### SERIES J.

11 filled.
8 tubes put into saliva.
In 8 days 1 tube tested, not infected.
In 13 days 1 tube tested, not certain, but likely infected.
In 20 days 1 tube tested, and infected.
In 28 days 1 tube tested, and infected.
In 32 days 1 tube tested, and infected.

In another series canals were filled as above, and over them was placed a thin layer of oxychloride and over all the same cement, as in the previous series.

### SERIES K.

7 tubes filled.
5 tubes put into saliva.
In 6 days 1 tested, not infected.
In 13 days 1 tested, not infected.
In 20 days 1 tested, not infected.
In 28 days 1 tested, not infected.
In 33 days 1 tested, not infected.

In another series the canals were as well filled with gutta-percha as possible, slightly warming them and using no lubricant nor filling the cavity with cement.

### SERIES L.

5 tubes were put into saliva.
In 24 hours 5 were tested and 2 were infected.

The above experiments are only a corroboration of work done by the author some years ago and published in the April number of the *Dominion Dental Journal*, 1900. The experiments at that time were made in a purely mechanical way, but they pointed directly to what was suspected at that time and to what has been shown by more recent investigation to be true. That the ordinary root-canal filling is not a barrier to either moisture or bacteria. The author when making the experiments did not dream of the infection of a root canal from the oral cavity, but was directing attention to the possibility of closing the apical end of the root canal only. To quote from the paper in question: "If a root canal ought to be filled there must be some reason for it. The best and only reason for filling a root canal is to keep something out of it that is undesirable. That undesirable something is most likely moisture or granulation tissue, or both, with a probable pyogenetic infection. It is fair to assume that a filling material that will prevent the passage of moisture will prevent the passage of bacteria and granulation tissue. This being granted, the relative merits of absorbent cotton, raw cotton, gutta-percha, and the cements as barriers to the passage of moisture and hence the passage of bacteria can be seen from the following experiments. It must be borne in mind that these experiments do not relate in any way to the solubility, destructibility, density or irritating qualities of the materials used."

Glass rods about two inches long with three-sixteenths of an inch bore were drawn to a fine point at one end, while the other end remained its original size. In this way a cone was made about three-quarters of an inch long and resembling the root canal of a tooth. In all cases these cones were opened clear through. When they were filled with the root-canal filling material their small ends were immersed in a red colored solution. This was accomplished by passing the tubes through holes cut in a piece of cardboard and the cardboard placed over a shallow pan containing the red solution. The tubes were held in an upright position, while only their small ends were below the surface of the solution.

Below is a tabulated form of the experiments arranged in the order in which they acted as barriers to moisture;

SERIES M.

| Material. | Tubes. | Hrs. Time. | Colored. | Not Colored. |
|---|---|---|---|---|
| Chloro-percha and gutta-percha points | 10 | 48 | 3 | 7 |
| Gutta-percha | 13 | 48 | 6 | 7 |
| Oxychloride | 13 | 48 | 11 | 2 |
| Absorbent cotton (large end of tube sealed) | 26 | 24 | 24 | 2 |
| Cotton and chloro-percha | 10 | 48 | 8 | 2 |
| Raw cotton | 22 | 48 | 22 | .. |
| Absorbent cotton | 7 | 24 | 7 | .. |
| Oxyphosphate (Ash) | 12 | 72 | 12 | .. |
| Oxyphosphate (Hammond) | 13 | 48 | 13 | .. |

Thus it would appear that if there were moisture at the end of a root canal, practically none of the above materials would prevent its passage into the tooth cavity.

I approach the summing up and the drawing of conclusions from the work I have done with some misgivings. First, because of the incompleteness of the work done, and, second, because it is quite possible to come to a wrong conclusion, though the premises may be correct. Again, the conclusions arrived at may not be wholly based upon the experiment here reported, because a great deal has been done that if now reported would only weary you. However, it may be safely stated that oxyphosphate cements, gutta-percha, cotton, or any combination of these with each other, or with any other undisinfecting materials will not prevent the passage of bacteria. Oxychloride of zinc will prevent the passage of bacteria for at least sixty days, but not moisture for that length of time. Some amalgams if properly mixed and inserted will resist the passage of bacteria for two months, and others will not resist bacteria for three hours, no matter how mixed or inserted. There are doubtless many questions arising in every active mind here. Have you tried this or that cement, or so-and-so's gutta-percha, or what amalgams leak or what do not? Do the bacteria pass through the substance of the material, or do they pass between it and the walls of the cavity? After testing ten or twelve cements of different names my conclusion is that they all leak; those that do not shrink allow the passage to take place through the mass. The only difference is, that those that shrink leak sooner than those that do not. Only a few amalgams have been tested, but it is quite likely that only those leak that contract or flow badly.

Root-canal fillings made by heating gutta-percha cones and packing them with an instrument that penetrates the material are not so resistant to either moisture or bacteria as those made by first using chloro-percha, and then carefully forcing the proper sized cone into the canal without puncturing or heating. When gutta-percha is heated it seems to have a tendency to creep, and unless it is held with continuous pressure until it is hard, spaces will appear around it. Notwithstanding its defects, chloro-percha and gutta-percha root fillings are the best resistants to moisture among those materials examined, but its power to resist either moisture or bacteria is not great enough to make it an ideal root filling.

In the light of what is shown in series E, D, etc., and in table M, consider a tooth in which the pulp has been devitalized and removed, the root canal filled with gutta-percha and the crown filled with cement or an artificial crown cemented on, or the tooth used as an abutment for a bridge which is set in cement. It is almost certain that bacteria will have penetrated from the oral cavity clear through the cement filling and gutta-percha root filling in less than a month, if the resistance of the living tissues do not prevent it, and we know that they very often do not. It is quite possible and in fact probable that there are more alveolar abscesses due to direct infection from the oral cavity than from an infection from the general circulation. It is quite clear from these experiments that if there be moisture or bacteria at either end of a tooth filled with cement or gutta-percha, they will be absorbed and kept in abeyance only by the resistance of the living tissues; but as soon as this resistance is lowered or the dose very much increased the tissues about the apical foramen are invaded and an alveolar abscess is imminent. Many filled teeth are kept in a lame condition for years because of the continued irritation of an infection about the apex.

Since a root filling made by first moistening the canal with eucalyptol and then pumping chloro-percha into it and into this forcing a gutta-percha cone is the best resistant to moisture, and since oxychloride of zinc is the best resistant to bacteria a combination of these two materials would seem to make the best root filling. The gutta-percha being placed at the apex of the root canal and over this a filling of oxychloride of zinc. This combination root filling has resisted infection from the crown end for over 60 days. Of course there is the probability of absorption of moisture if there be any from the apical end, but no harm will come of it if bacteria are not carried to it by the circulation.

In conclusion, it is my impression that few, if any, root-canal fillings are resistant to either moisture or bacteria, and that most peridental infections are direct from the oral cavity in pulpless teeth, and if oxychloride of zinc were used in the pulp chamber or some part of the root canal many, if not all, such infections would be averted.

[We are indebted to *The Dental Review* for the use of this article, advanced proofs having been, by request, supplied by Editor Johnson.—Ed.]

# SOME OBSERVATIONS ON THE INTERNATIONAL DENTAL FEDERATION.*

BY H. A. SMITH, D. D. S., CINCINNATI, O.

The International Federation and Commission of Education was organized at the Dental Congress in Paris in 1900, but its first meeting was held in England last year, and the second meeting has just been held in Stockholm, Sweden, during the past summer. The next meeting will be held in Madrid in connection with the International Congress of Medicine which convenes in that city in April, 1903. The fourth session will probably be held in St. Louis, in connection with a World's Dental Congress, at the time of the World's Fair in 1904.

The object of this organization is educational in a sense. So far it seems to be the desire of its promoters that a comity of educational methods and standards may be made international. Technical sciences have as yet not received much consideration, as most of the time has been taken up with considering educational methods and standards. But it is probable that at a near time steps will be taken to at least gather historical statistics as to the progress of every phase of scientific progress throughout the world. At the recent meeting there were present representatives from almost every civilized nation. Some countries were liberally represented. This country was well represented in numbers and talent as well. England was not so well represented as was expected in view of the meeting there last year.

The question of a universal method of training dentists is a vital one. We hardly realize the difference in the systems of dental education in this country and abroad. American methods have made a deep impression on the men of other countries. Abroad a dental student is trained in a medical college. He must take two or three years in medicine, and much that pertains to dentistry he learns from a preceptor outside. The body which educates him pays no attention to dentistry. He goes before a medical board to be examined for a license to practice dentistry. He has no degree; they give him none. It is because of such methods that American dentists excel. The purpose of this federation is to bring about a uniform system of dental education. The prospects seem to me not very encouraging. All that has been done was to appoint a committee on curriculum of dental studies. There is also a committee on oral hygiene which is interested in the instruction of the masses.

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*Remarks at Ohio State Dental Society, December, 1902.

At the meeting the subject of qualifications for admission occupied more time than anything else. What shall be the qualifications of the applicant for admission to the institutions throughout the world? Naturally the people of Europe felt that their standard was good. Germany wished to have a standard equivalent to that for admission to schools of law and medicine. Finally a resolution was adopted to the effect that students seeking admission to all dental schools should have an education equivalent to admission to the schools of law and medicine in countries where the schools are regulated by the government. In countries where educational matters were not under government control, the standard should be the same as where these matters were regulated by the government. This makes it impossible for any school having federation membership to make the standard lower than any other schools in the federation. The Ecole Odontaire in Paris has already taken up the four year course, and adopted the best American and European methods.

There was some dissention in the Executive Council as to the proposition to hold the fourth International Dental Congress at St. Louis in 1904. The German and English members thought it was too soon after the third Congress to make it possible to organize a Congress of any international interest or value. The majority of the committee, however, favored the plan. It will probably be finally considered at Madrid in April.

# THE RELATIONS OF THE BOARD OF DENTAL EXAMINERS TO THE PROFESSION.*

BY H. C. BROWN, D. D. S., COLUMBUS, OHIO.

Our present law regulating the practice of dentistry was passed April 29th, 1902.

Although not containing all the features of the original draft of the bill, the new law is a great improvement over the one in force for the past ten years, which was very lax in its provisions, thereby permitting Ohio to be the "dumping ground," so to speak, of adjoining States.

It was only necessary that an applicant possess a diploma from some legally chartered dental college and pay a fee of two dollars to secure a certificate entitling him to practice in Ohio; while our present law provides that any one who is a legal resident of the State and has been a student of dentistry, under a preceptor for one year prior to the passage of this act, shall be permitted to take the examination during the years 1902 and 1903; and that we register those who have been proprietors of offices in the State continuously since January 1st, 1903; also that we register all graduates of dental colleges of this State up to and including the June, 1905, session of the board, all other applicants being required to present a diploma and pass the examination before certificates of registration are issued them. Therefore, this eventually becomes a very strict law, and after June, 1905, the dental profession of the State will have legislation that is uniform in its provisions, and will compare favorably with other States having high standard requirements.

In the reports of the various State Boards of Examiners at the National Association of Dental Examiners at Niagara Falls, last July, I was surprised to find that nearly everyone admitted more or less weakness of their respective State laws. However, I may say that all are aggressive and do not permit illegal practice.

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*Read before the Ohio State Dental Society, December, 1902.

It is not equitable to those who are inclined to be legal practitioners and comply with every requirement of any new legislation, thereby assisting materially in the elevation of our profession, and at the same time protecting the public and themselves, that others be permitted to practice without strictly complying with the same requirements.

I am firmly convinced that there is much illegal practicing done in Ohio. This is due to our inability to secure proper legislation in the past. A person who has practiced for a long time without interference, reasons that if it has been unnecessary to register before why go to that trouble and expense now?

I am confident that there are a number of dentists practicing illegally, who are graduates of the different dental colleges of this State and therefore are eligible to register upon proper application and fee of ten dollars, while perhaps equally as many are graduates of other colleges, and their neglect or ignorance will cost them eighteen dollars additional fee and the expense to say nothing of the unpleasant features of taking the examination.

There is another class of illegal practitioners who have been students of preceptors. They are eligible to examination during the years 1902 and 1903, if they are legal residents of Ohio, and have been students under preceptors for one year prior to passage of this act.

I regret that one important feature of the former and present law has been disregarded by some of our best men of the profession. I refer to the clause which provides that the registration certificates shall be placed in a conspicuous place in the office. This is one of the reasons why it is difficult to ascertain whether a practitioner is registered, without referring to the book for information. A diploma may be where it can be seen, but it is the certificate that makes the person a legal practitioner. I consider it important that your certificate be placed as the law provides, and by so doing you will not only meet the requirements of our law, but will assist in establishing a uniformity that should exist, making it the more difficult for any one to practice illegally. I know of a number of registered dentists who, in their endeavor to take especial care of their certificates, issued some years ago, were particular to put them away in some safe place and have never seen them since, and perhaps never will.

Our Board will issue, for a fee of ten dollars, duplicates to such persons, upon proper application and affidavit that certificate has been lost or destroyed.

The relations between the profession and the Board of Examiners should be harmonious. The success of any examining board will depend, first, upon the examiners themselves, second, upon the law under which they are appointed, and third, upon the hearty co-operation of the profession. It is the public as well as the profession we are supposed to protect. Although the public may not appreciate the interest shown and consider it purely mercenary, I believe the time is not far distant when we may hope to realize that our efforts have been appreciated, and that is will be manifested in raising the educational requirements. This law was not enacted for those practicing the profession and at the expense of the public.

In procuring legislation from time to time as is needed, there should be more interest displayed by the entire profession than has shown itself in the last few years, when efforts have been made to secure needed legislation. I desire here to state that some criticisms may be offered to certain provisions that are embodied in our present law. If everyone know of the time and energy which Dr. Geo. H. Wilson, as secretary of the legislative committee of the State Society, gave to making this law fit the conditions existing when certain changes were proposed, I assure you that he would think twice before speaking critically.

The Board of Examiners is executive and judicial. Executive inasmuch as it is its duty to see that the provisions of the law are enforced. It is given power to make such rules and regulations for carrying out the provisions of the law and conducting the affairs of the Board as may be needed.

It has been decided by Attorneys General and the Supreme Courts of different States that it has judicial functions. Two recent Supreme Court decisions were rendered in Wisconsin and Illinois, respectively. In an exhaustive review the Supreme Court of Wisconsin sustains the Board of Examiners in every position and among other things says: "The State Board of Dental Examiners, proceeding reasonably, is the sole tribunal under the statute to determine the questions of fact to be solved, preceding the licensing of a person to practice the profession of dentistry in this State."

In a very able paper regarding this decision, read before the American Medical Society, by Dr. Charles C. Chittenden, a member of the Wisconsin Board of Dental Examiners and chairman of the Committee on Colleges of the National Association of Dental Examiners, he says: "The deduction of your essayist from all this is that the question of unifaction of dental laws and interstate reciprocity of license, together with unifaction of dental educational standards on any reasonably high plane 'within the bounds of common sense,' is in the hands and entirely within the province and power of the State Boards, provided they will act in concert in carrying out the high duties imposed upon them as the dental police officers of their several States, and this, too, without the enactment of any new dental legislation whatever. So it will seem that the statutes in every State in the Union grant its State Board all the judicial power necessary to join in establishing absolute National standards of dental educational requirements. There is absolutely nothing in all this proposed unifaction of standards, etc., by the Boards that can react in any but a beneficial manner upon the schools themselves. The element of commercial competition will be eliminated where it exists, and in its stead the spirit of emulation will be greatly stimulated."

Our law provides that "upon a unanimous vote of the Board we may excuse from examination an applicant holding a license to practice in some State, requiring a diploma and examination, upon the payment of examination fee." For the present we do not recognize such certificates, yet we appreciate the justness of such recognition and stand willing at any time to lend our efforts toward establishing high standard interchangeable relations, but after an unsuccessful effort on our part to install such relations, we do not consider that we would be treating the profession of Ohio fairly, nor aiding in the unifaction of all State dental laws. I believe, after 1905, the time when our law becomes uniform, that then it will be possible to have reciprocal relations with some, at least, of the leading high standard States.

The question of an advisable method to pursue in regard to such as are practicing illegally and how far the Board may be justified in going to discover all unregistered practitioners with a view of enforcing the provisions of the law, is a more or less perplexing one. It is the "duty of the prosecuting attorney of each county to prosecute every case in final judgment whenever his attention shall be called to a violation of the provisions of this law.;" but the difficulty arises from the fact that as a Board we have no knowledge of the legal standing of the profession in this State, other than as we con obtain from the list of those that are registered. You can have no positive knowledge as to whether the dentists of your community are all registered, unless you write the secretary of the Board for such information. I will state that, as secretary, I have received a great many such inquiries and have always answered them promptly, giving the information asked, and as long as I remain secretary, I shall give that and other business as prompt attention as possible.

To obtain an accurate list of dentists practicing in this State. I think a prominent member of the profession in each county should be requested to furnish the Board with the names of all those practicing in his county. This would be an accurate way of obtaining the information, especially from the counties of moderate population. And as for cities, the four larger ones have representation on the Board, and each could report for his city.

I do not consider there is any occasion for any one practicing in this State without being registered, and I believe it reasonable to hope for such a result, before this society meets again; provided, of course, that our Board has the earnest co-operation of those members of the profession who are registered.

It is impossible for us as a profession, or a Board, to control or regulate the methods of conducting a practice, but while our law is very explicit regarding assistants, we can require that all persons employed in offices and performing dental work, shall be registered. This does not apply to the unethical any more than to thos conducting an ethical practice. I trust that all who employ assistants will recognize the importance of this provision and see that their assistants are legal practitioners, thereby assisting in eliminating this troublesome question as its tendency is to evade this provision of the law.

In making a report of the work done by the Board, I will state that the present Board was appointed June 5th, and organized June 9th, 1902. We have held two examinations, as provided for by law, beginning June 24th and November 25th, respectively. Seventeen applicants took the first examination, fourteen of them passing; at the examination last week we had fifteen applicants and one for re-examination who had failed last June, of these six candidates passed.

Most of the applicants have been graduates of colleges outside of Ohio, and they represent some of the leading schools of the country; for instance, of the fifteen applicants last week, six of them were graduates from the University of Michigan.

Our Board recognizes the full import of the practical part of an examination, and each applicant has an opportunity to present evidence of ability in the various clinical requirements that we demand.

The following is sent to each applicant: "Applicants for examination are required to bring instruments, engine, plate punch, files and impression trays and the following materials: gold and silver plate and solder for same, alloy, cement, rubber dam, facings and gum section teeth.

"They will be required to prepare a cavity and insert gold filling, and if requested, fill a tooth with alloy or cement; take plaster impressions and secure model therefrom; grind gum section teeth; back facing, invest and solder with either silver or gold."

The dental department of the Ohio Medical University has kindly given us the privilege of using their college and equipment in order to make this feature of our examination as practical as possible and if it was not for this opportunity, it would be impossible for us to accomplish the same results in this particular part of our examination. Our Board endeavors to be practical, not technical, and I think our clinical requirements are equal, if not superior, to those of any State. In anticipation of changes in the law, a great many graduates of colleges from other States were desirous of registering under the provisions of the former law, but some graduated a day or so too late. On advice of the Attorney General, we registered fifty-five, whose applications were filed legally with the former Board before the passage of present law, at the former registration fee of two dollars. We returned fees to perhaps fifty, whose applications were not received in time to permit them to be registered under the former law.

Besides the fifty-five above mentioned, we have registered one hundred and five, making a total of one hundred and sixty, which makes a grand total of three thousand two-hundred and thirty-five who have registered in this State since the passage of the former law of 1892. However, a great many of those who have registered have not, and perhaps never will, practice in this State, as they only took advantage of lax condition of law and to prepare for future emergencies.

In closing, I will state that we require a clinical grade of eighty per cent and theoretical of seventy-five per cent, and that we only know an applicant by the number assigned at the beginning of examination.

# TEETH IN RELATION TO DEGENERACY.*

### BY H. C. RUTTER, M. D., COLUMBUS, OHIO.

It must not be understood that all malformations are included in the accepted definition of degeneracy. Many prenatal changes result in a changed development in some one particular part of the body without impairing in the slightest degree the normal and healthy balance of the system or the harmonious relationship of the different organs with each other. For example, the union of two fingers or toes, the presence of a hair-lip, a cleft palate, the over-riding of a tooth, etc., are not, standing alone, to be considered evidences of degeneration as the term is generally accepted.

These are often mere accidents, and although they render the individual worse than his ancestor in the one particular respect, are no proof whatever of the general deterioration which the term degeneration is used to designate. Some one of these accidents of development is not infrequently found in men of the strongest physical and mental constitution. It is only when they are associated with other evidences of constitutional deterioriation that they can be properly designated as stigmata of degeneration.

Of all the stigmata of degeneration none are more characteristic of certain conditions, perhaps, than the teeth. While all parts of the body may, under certain conditions, present abnormal condition and development, we have nothing more uniform and persistent than particular forms of departure from health in the shape and arrangement and disease of the teeth in certain degenerated results of heredity.

In this paper I shall only generalize, as I do not wish to take up much of your time, and shall therefore say what I have to say rather dogmatically and cite the numerous authorities I have consulted on the subject.

These indications of degeneracy are usually observed in the teeth at a very early period. To use a paradox, the first appearance of the teeth in relation to degeneracy is their non-appearance, or much delayed appearance, as in rickets. While rickets has been recognized generally as a disease due to malnutrition and unsanitary surroundings, late researches prove that it is associated with degeneration and prenatal changes and should be assigned a place along with afflictions known as degenerative, such as idiocy, scrofula, etc. The eruption of the teeth in rickets is usually delayed and they are irregular in shape and size. The gums are often so spongy and bleed so readily that the disease has been confounded with scurvy. In idiocy, cretinism and feeble-minded children, the teeth usually indicate the degenerative condition very early.

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*Read at Ohio State Dental Society, December 1902.

A visit to one of our idiotic asylums or to the hospital for epileptics will show an astonishing assortment of abnormal tooth development in patients where the disease is the result of degeneration and not merely accidental. They are irregular in shape, position and size, and decay very early in life. In the degenerate condition caused by inherited syphilis, the teeth furnish the most reliable and uniform guide to a knowledge of the true condition. This appearance was first observed and described by Johnathan Hutchinson, who says in relation to it:

"It consists in the dwarfing of the tooth, which is usually both narrow and short, and in the atrophy of its middle lobe. This atrophy leaves a single broad notch, vertical in the edge of the tooth, and sometimes from which notch a shallow furrow passes upward in both anterior, and posterior surfaces, nearly to the gum. This notching is usually symmetrical. It may vary in degree in different cases, sometimes the teeth diverge and at other times slant toward each other."

Many abnormal conditions of the teeth are found in congenital epileptics, feeble-minded and idiotic. The teeth are mostly dwarfed. In some instances the space is wide and irregular. Often even the incisors are found decayed and broken off before puberty. The size and shape of the teeth, and their position, frequently protruding forward so as to elevate the upper lip and push out the lower lip, and give a horribly grotesque appearance to the degenerate. I well remember how the dreams of my younger boyhood were poisoned by a neighboring degenerate whose canine teeth protruded through his lip like the great tushes of a wild boar.

Of course this feature is frequently accentuated by unduly short lips, which in turn are often the stigmata of degeneration. It is important to remember that the relationship between diseased teeth and many other diseases is quite intimate, and that they mutually react the one against the other. That is to say, that while in many cases ill health and heredity cause bad teeth, bad teeth often cause ill health and aggravate the ills resulting from degeneracy. Many nervous disorders are the direct result of defective teeth, which in turn may have resulted from some inherited weakness of nutrition. Several well authenticated recoveries from epilepsy have resulted from proper treatment of defective teeth, and my experience goes to show that in nearly all cases that disease may be greatly benefited and results enormously ameliorated by the dentist. And so it is in many cases of neurasthenia, where a raging tooth or a lot of irritable teeth causes confusion of the entire nervous system and finally brings about such pathological changes as fasten upon the sufferer a permanent and incurable malady. Thus the defective teeth may stand as a direct cause of degeneration, the neurasthenia parent, who in turn gives the world a degenerate offspring.

I shall not dwell upon the immediate results of carious teeth, that is, the effect upon the victim during periods of recrudescence, or the additional labor a frequent return of those periods impose upon the recording angel. Although I am inclined to the belief that a dentist never sees a real case of toothache. It is always my experience that some occult influence emanates from the dentist which relieves the pain before we actually come into his presence. I have carried the most torturing toothache to the very threshold of the dental office, when, presto, it disappeared, nor could I tell which tooth was sore or which side of the face had been painful. But it requires no great effort of the imagination to picture the effect upon the offspring of one suffering from the nervous strain imposed by chronic toothache. Perhaps no other ailment to which human flesh is heir is so exasperating, so destructive of moral and mental quietude, so harrowing in its effects upon the entire nervous system as the toothache, and all so little liable to receive from friends the sympathy which often soothes and softens other distressing maladies.

"When fever burns or ague freezes,
Rheumatics gnaw, or colic squeezes,
Our neighbor's sympathies may ease us,
We pitying moan,
But thee, thou hell of all diseases, aye mocks our groan."

To sum up, if I should be asked what is the most prolific cause, remote and immediate, of insanity, idiocy, epilepsy and degeneracy, I should unhesitatingly reply, primarily indigestion. And we all recognize the prominent part played by the teeth, indigestion and asimilation. It therefore follows that bond of union between the dentist and the neurologist must of necessity be close. Bad teeth do their primary effect in causing neurasthenia and nervous weakness, and secondarily by impairment of digestion lead to degeneration in the offspring. These degenerate offspring propagate bad teeth in their children, the cycle therefore is complete, as it is in all natural phenomena. It requires heat to produce cold, which in turn gives us back heat. It requires water to render possible the growth of verdure on the arid plains, and in return that verdure brings bountiful rains. It requires force to produce the golden grain, which returns to us that force in a thousand-fold measure.

The lesson is easy; it is your province to give the world good teeth, and good teeth will in return give the world good men.

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# SOCIETY PROCEEDINGS

## OHIO STATE DENTAL SOCIETY.

### DISCUSSION ON DR. CALLAHAN'S PAPER.

### ANNEALING GOLD FOIL.

Dr. J. F. Stephan:—The points brought out in the paper appeal to me strongly as something practical and desirable. The usual method of annealing gold, particularly the thin forms, have always appeared to me to have grave disadvantages. Undoubtedly an instrument such as is suggested by the essayist will put our foil in the best possible working form; and it seems strange that no means of controlling the degree of heat in electric gold annealers has not been called for before. I trust the essayist may continue his investigation of this subject until he shall have discovered something definite about this important matter.

Dr. W. H. Todd:—I have used both alcohol and gas flames for annealing my gold, but I am confident I never got such good results as from the electric annealer which I am using at present. It saves the operator's time as well as makes the annealing process a more perfect one. I find that fillings do not pit or scale as when the alcohol or gas flame was used for annealing. I think the addition of a rheostat will add materially to the value of the electric annealer.

Dr. L. E. Custer:—The paper read by Dr. Callahan has a good and proper basis, electrically and scientifically. Gold foil, because of its treatment by the gold-beaters, has lost its normal crystalline character which may be restored by subjecting it to heat of the proper degree. Cohesion of gold is not possible unless there exists a normal relation of its molecular particles. Electricity is, in my judgment, a preferable method of annealing gold, because there is the least danger of ever-heating, or contamination from the combustion products of the alcohol or gas flame. It is true that different forms of gold will need different degrees of heat and also different methods of applying the heat. Electricity has no magnetic effects on gold that would disintegrate or destroy its cohesive properties. The rheostat will surely control the degree of heat and make it possible to anneal any foil to the best advantage.

Dr. E. C. Kirk:—I would accord heartily with the views expressed by the essayist. Uniformity in annealing gold foil is an important matter and it can unquestionably be best accomplished with the electric annealer, as it gives percision and homogeneity which results in a more perfectly consolidated gold filling. It is highly desirable that a more perfect appliance than the gas or alcohol flame should be found for annealing the thin gold. It is claimed by Dr. Shumway, of Massachusetts, that tin is improved for working by annealing properly. It is highly probable that insufficient attention has been given to this important subject.

Dr. H. T. Smith:—Why may not a suitable thermometer be used to determine the proper degree of heat? If the heats required are no higher than indicated in the paper, I see no reason why a suitable thermometer should not provide sufficient control for all practical purposes. A thermostat might be employed were it not so expensive. It is probably true that exact temperatures are not necessary for practical results. It would seem not from the most excellent results which have come from the hands of operators who use no other method of annealing than the gas or alcohol flames.

Dr. H. L. Ambler:—I have used the thermometer from my vulcanizer in testing the heat of a Custer annealer, and in this way I have found it possible to get approximate results in temperature. We must use a lower heat for thin than for heavy foils. Tin foil will oxidize or melt if the temperature is carried much beyond 150 degrees. A lower temperature will make the tin more cohesive, but at the same time it will also become stiffer.

Dr. H. F. Harvey:—I use the Custer annealer with a rheostat, and like it very much. I have experienced some trouble in using several different forms of gold in the same filling, as it will not all submit to the same heat and be equally pliable and tractable.

Dr. Callahan in closing said that the tendency was for all metals to recover their crystalline form, and as the electric annealer would produce a proper heat for hastening this process, it should always be employed. He knew of but one annealer that would carry a heat of over 400 degrees.

## THE TEETH IN RELATION TO DEGENERACY.

### DISCUSSION.

Dr. E. S. Talbot: I do not think there is anything in the doctor's paper which I could criticise. The doctor has had about twenty-five year's experience in connection with our public institutions, and knows whereof he speaks. I can only extend the work he has done, and give some examples of degenerate teeth, as seen in my practise. I have made my own definition of degeneracy because I think it is more applicable to the work which I have been doing for the past thirty years. It is this: A degenerate is one whose nervous system is unstable, and whose physical development is a departure from the normal. A degenerate organ is one which manifests either arrest of development or excessive development.

To show the presence of this condition, it is necessary for us to know something about evolution. Aristotle first noticed differences in development of tissue. He laid down the law of growth as that law by virtue of which an organ is lost for the good of the whole organism. Others taking their cue from this statement, changed the idea by stating that there is an arrest of development, or excessive development. A change in the human face is taking place. The brain is developing and the jaws and teeth are retrograding. Whenever disease affects an unstable nervous system, the jaws and teeth are affected because they are unstable. Of all the structures of the face, the teeth are most affected. An arrest of development is nearly always an atavism because the human body has developed through the lower forms of animal life to the higher, and an arrest of development is nearly always a return to some lower form of life.

Camper called attention to the development of the face of the chimpanzee on the one extreme; to that of the typical Greek profile on the other. In the lower forms of life the jaws are larger in proportion to the brain. As we pass to the higher forms the brain pushes forward until at last, brain and jaws are on a perpendicular line. Here we commence our work. Here we commence to notice degeneration. We get deformity among the lower orders of life. It is only when the forehead has come forward that we find deformities of the face, jaws and teeth. In one form of arrested development the forehead is developed, but the development of the lower jaw is so far arrested that it falls entirely inside the perpendicular line dropped from the forehead. In such cases we have deformities of the nose.

In other individuals there is an arrest of development of the face, and the lower jaw has developed forward. This is not unusual. It is an atavism, a return to the original lower animal. It is important to note the difference between heredity and atavism. By virtue of heredity the child inherits directly from the parent. By virtue of atavism he inherits something remote.

On account of a defective liver, oxidation is not complete, the child grows up fleshy, and there is a large head, but the development of the face is arrested. You have all seen such cases. There is always an unstable nervous system accompanying such cases.

When we have arrest of development of the face, one of the jaws is affected; sometimes it is the upper, sometimes the lower. You have all seen cases of prominent upper teeth, the teeth have pushed forward in the process, but the jaw above the apices shows arrest of development.

Another common form of degeneracy is the V-shaped arch. This is a return to the reptilian type. It could not assume any other form, but I have not time to-night to show why this is. Another common form of degeneracy is the saddle-shaped arch. This is a return to the carnivorous type. Like the V-shape, it could not take any other form. Every form of degeneracy is a departure from one of these forms and is produced by the teeth when they come into the jaw.

By comparison with the normal vault, the degenerate vault will be seen to be high.

One of the causes of interstitial gingivitis is an arrest of development of the jaws and narrow processes.

When there is an unstable nervous system the process becomes hypertrophical. Prendergast, who murdered Carter Harrison, was a degenerate, there was arrest of the development of the upper jaw, with excessive prominence of the lower. The development of the brain was arrested. The right side of his head was much larger than the left.

In the lower vertebrates there are from forty to seventy-two teeth. Sometimes we find a tendency to return to this condition, with the result that there are extra teeth. It is singular that when this occurs the extra teeth are found in either the anterior part of the mouth or the posterior, and sometimes they are found in both at once. This is an atavism in two ways; it is an effort to return to the original number of teeth, and you will find by noting the shape of the extra teeth that they endeavor to return to the cone shape of the lower order.

There are two theories as to the evolution of the teeth; one is the compressant theory; it holds that two of the original cone-shaped teeth have been pressed together to form a bicuspid and four to form a molar; the other is the theory which holds that there has been a budding from the original cone-shaped’ tooth. I think it can be shown that both theories are partly correct. If you will examine the syphilitic teeth due to development from disease, you will see that development has been arrested while they were trying to take on the cone shape.

In degenerates we always find premaxillary bones; we never find them in any other class of people. They mark a return to a lower form. Ridges through the roof of the mouth mark degeneracy. Sometimes they amount to lumps of bone. Sometimes union between halves of a jaw does not take place until the age of twenty-five or thirty. As a result of mastication, irritation is set up, resulting in the formation of a ridge.

# TRANSLATIONS

## ARSENICAL DEVITALIZATION BY PRESSURE.

JAIME D. LOSADA IN "LA ODONTOLOGIA."

Translated for THE DENTAL SUMMARY by Dr. F. R. Chapman.

The process which we are to explain today is a combination of pressure anesthesia with cocaine and of the therapeutic action of arsenic. Although the field of the newer method may be more limited than that of the older, we believe, without doubt, that in some cases it will lend true service and will be without a substitute, since it participates in the good qualities of both methods. We consider it pertinent, for the better comprehension of our idea, to first refer to "pressure anesthesia."

This consists, as its name indicates, in rapid anesthetizing (3-5 min.) of the pulp, infiltrating its tissue with the aid of strong pressure, permitting the act of extirpation to proceed painlessly. Further, if anesthesia be suspended the pulp will return to its former condition, and if it was in a pathological condition, the pain which temporarily disappeared will return. We will not describe the technic of the application of arsenic, but we consider it convenient to consider some of the theories which pretend to explain its effects on the pulp, in order to understand afterwards with greater facility the fundamentals of our new method.

We know that the pulp consists of modified connective tissue, containing a dense plexus of blood vessels and nerves.

That which we call simply "arsenic" and use for devitalizing the pulp, is arsenious acid, more properly called the tri-oxide of arsenic, $As_2 O_3$, a substance eminently poisonous, with which drug we associate others to render less violent the action of the first on the pulp and to avoid pain.

## ACTION OF ARSENIC ON THE PULP.

The more general theory concerning the action of arsenic on the pulp, is that it produces a violent inflammation, and augments the volume of the vessels. The pulp being inclosed by walls absolutely unyielding, is devitalized by strangulation of the vessels at the apex.

Later experience does not demonstrate the truth of the foregoing theory, since death of the tissues is produced even when these are not inclosed; the pretense of strangulation not being possible in this case.

Arsenious acid does not coagulate the tissues, its penetration being therefore more rapid.

It possesses a specific action on the blood corpuscles, forming characteristic compounds with the blood. It is absorbed by the blood vessels causing the destruction we have already mentioned, and dilating them with a tendency to thrombosis. Its action on the nervous elements is complex.

Arkovy defines it saying that "it effects principally the neurilemma, destroying the medullary vein, and altering the axis cylinder."

The fibrous mass of the tissue suffers no alteration, although the cells of this same tissue are considerably augmented in volume.

Miller has made various notable experiments on the action of arsenic, applying it to the tails of mice; placing a ring about the base, or inclosing them in plaster of Paris, to imitate the walls of the pulp chamber.

Even without being inclosed in plaster, mortification is produced, the oedema being in such cases enormous.

The action was more rapid when a ring was placed about the base of the tail, but no great difference was produced by inclosing in plaster, save, naturally, that no oedema existed.

The action of arsenic is progressive, commencing at the point of application and extending slowly from thence.

In those cases where the pulp is not exposed it is necessary for the action of the drug to traverse the dentinal tubules and the odontoblastic cells.

Arsenic has a paralyzing action and causes the degeneration of the nerves of the pulp, destroying them by overthrowing the circulation.

If the theory of strangulation were correct the entire pulp should die at one time, which is not the case; and further, death of the tissue takes place without being inclosed in rigid walls.

We have all treated pulps, in which after an application of arsenic, we have found a part completely insensible, while other parts remote from the point of application with persistent sensibility and therefore vital.

This fact, incontestable and frequent, absolutely demonstrates the error of the theory of death of the pulp by strangulation for if it were true, as verified at the apex, the entire pulp would remain, *ipso facto,* without nutrition.

### PULPS NOT ALL AFFECTED ALIKE BY ARSENIC.

Not all pulps are equally affected by arsenic; some die in a few hours, while others resist for weeks. When the pulp contains nodules or calcareous degeneration the action is much more slow.

We opine that the action of arsenic is due to the two principal theories above expressed; that it produces hyperemia, and operates through the vaso-motor nerves, destroying the pulp by the consequent withdrawal of nutrition.

Hyperemia occasions pain by compressing the nerve filaments. To avoid this, various substances are used with the arsenic to anesthetize the pulp and produce the loss of vitality while in a state of analgesia. But this result does not always follow, the arsenical application being many times very painful; above all when the pulpitis is violent, the dilated vessels not absorbing the arsenic, and far from causing the pain to disappear, it is augmented.

It is necessary in such cases to first reduce the congestion of the pulp by methods somewhat difficult and of doubtful result in general.

How may we relieve the terrible pain of pulpitis and prevent its return?

Only one method satisfies these conditions: the immediate extirpation of the pulp by pressure anesthesia. Yet, this method is not always practicable, since enough time is necessary to open the cavity in a manner most suitable for the extraction of the pulp; and we all know that should the canals be slender and tortuous the operation is long and difficult.

### A NEW METHOD OF DEVITALIZATION.

To a case such as the one just described we owe the idea of the new procedure which we have christened: *arsenical devitalization by pressure.*

The manipulation is simple. The tooth is prepared and cocaine anesthesia by pressure secured. Once anesthetized, arsenical cotton saturated with clove oil is placed in the cavity, covered by a plug of unvulcanized rubber. To this pressure is applied, repeating five or six times in about ten minutes.

At the first application of cocaine, the pain disappears not to return, since the anesthesia lasts about an hour; moreover, its action as a vaso-constrictor produces a specific effect on the pulpal inflammation.

In the meantime, while the anesthesia continues the pulp absorbs a sufficient quantity of the arsenic to produce the destructive changes of which we have spoken, and therefore such alteration in its vitality that if it does not absolutely die, the pain which was first marked will not be produced during the hour it is deprived of sensibility.

The quantity of arsenic necessary for devitalizing a pulp is so infinitely small that it has been heretofore impossible of determination notwithstanding the conscientious studies of Truman of Philadelphia. And the pressure causes that small quantity to rapidly penetrate the pulpal mass.

After the treatment just mentioned, the arsenical preparation is left in the cavity and in a few hours, or the day following, or after several days the extirpation of the pulp may be proceeded with and the canals filled.

Naturally, any preparation containing the tri-oxide, or powdered arsenic may be substituted for the arsenical cotton.

We have employed this process in more than twenty cases always with complete success, except in two: in the first we encountered pulp-stones, and in the other (a superior molar) the buccal canals were almost calcified, preserving their vitality, although the palatine was insensible.

# CURRENT ARTICLES

[Condensed for THE DENTAL SUMMARY readers.]

## A BRIDGE TOOTH.

BY D. D. LESTER, CHRISTIANSBURG, VIRGINIA.

I have found a tooth constructed after the plan of the "J. Y. Crawford Crown," convenient in place of the ordinary bicuspid and molar dummy in bridge-work. To make such a tooth, select a rubber plate tooth of suitable size, shape and color, allowing for the thickness of gold; then from twenty-eight gauge gold, make a jacket or cup in which the tooth will fit snugly (Fig. 1), allowing the gold to come about to the grinding or occlusal surface, except at the buccal or especially mesio-buccal aspect, where it should be cut away for esthetic reasons.

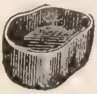

Fig. 1.

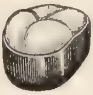

Fig. 2.

The cup or jacket is quickly and easily made by taking a strip of plate (twenty-eight gauge) and bending around the tooth to get the correct length, making it rather large in diameter to permit of proper contour, then push the tooth in place in the tube thus formed and mark the length and slope of the tooth on the inside of the tube as a guide in cutting the cervical end of the jacket. When it is cut to the proper length and slope, it will perhaps need some shaping with the contouring pliers; probably the cervical end on the buccal side may need drawing in to make it fit the contour of the tooth; and perhaps contraction may be indicated at the occluso-lingual edge also. When shaped satisfactorily, place on a piece of plate for a bottom and solder. Put the tooth in the jacket (Fig. 2), and arrange on the articulator, when in a satisfactory position, run a little investing material around the cervical end to hold in position. After removing the tooth, solder the jackets and crowns to your bridge, polish and cement the tooth in place. You have a bridge in which the porcelain has not gone through the fire, and if broken in any way, it can be quickly and easily replaced without removing the bridge from its abutments, by simply selecting another tooth and cementing it in place. The tooth is much neater in appearance than the old style dummy and requires less time to make. Undercuts can be ground in the tooth with wheel or disk, and the inside of the jacket should be roughened with a cross-cut fissure bur to secure adhesion of the cement.

The same jacketed tooth soldered on a cap fitted to the root of a natural bicuspid is the "Crawford Crown" and it is a good strong one, as the jacket affords strength as well as a means of replacement in case of accident.—*Items.*

## THE MANIPULATION AND CARE OF CEMENTS.

BY W. V-B. AMES, D. D. S., CHICAGO, ILL.

A phosphoric acid solution, pure and simple, in a proper degree of concentration, will so combine with certain metallic oxids, notably zinc oxid, as to make a workable cement, if proper conditions are observed. While the liquids of cements of this kind in use in dental practice are never simple solutions of phosphoric acid, the same requisites of manipulation hold good to a considerable extent. To be sure, some of the acid solutions largely neutralized with alkaline phosphates need very little consideration in the mix to obtain the best results possible to the combination, but with what I will call the better class of cements, those in which non-alkaline metallic phosphates have been used to modify the working qualities of the acid, certain precautions are necessary, which can be best illustrated by considering a mix of simple syrupy phosphoric acid and basic zinc oxid.

### TECHNIC OF MIXING.

If basic zinc oxid is mixed with a concentrated solution of phosphoric acid by making small additions of the oxid and spatulating thoroughly, especially the first aditions, a workable mass is obtained which will make a quite satisfactory filling. If, however, the zinc oxid is added in larger portions, without the precaution of spatulating thoroughly the first additions, the mix will set quickly, be granular in packing, and probably generate heat during setting. The difference illustrated here depends simply on the fact that in the gradual mix with much spatulation there is developed a considerable amount of normal phosphate of zinc, from solution of zinc oxid in the acid, which has a modifying influence on the setting process. In cements referred to as the better class, having a liquid consisting of phosphoric acid modified by such metallic phosphates as the zinc phosphate of our illustration, there is a limitation in the process of treating the acid with the phosphates, as the acid solution will not hold, through all the vicissitudes to which it is apt to be subjected, a proportion of these non-alkaline metallic phosphates sufficient for ideal working qualities.

We will suppose or assert that in this class of cements the liquid has been treated with non-alkaline metallic phosphates to the limit of safety, beyond which there would be a probability of crystallization—which is always detrimental if not disastrous. Because of this limitation in the compounding of a high-grade cement, it becomes necessary in their manipulation to adopt to an extent the procedures described in connection with the plain ortho-phosphoric acid, which will usually give the difference, especially in midsummer, between smooth plasticity with the desirable setting qualities and a granular consistence with objectionably quick setting.

My incentive for the making of these points has been from very frequently seeing the ingredients of a mix of cement fairly *slopped* together, there being a semi-mixed borderland at the edge of the supply of powder, giving a clotty condition as it is brought into the mix. If the supply of powder is sufficiently removed from that of the liquid and the additions of powder are carried over in a cleanly manner and then thoroughly spatulated, this clotty condition can be entirely avoided.

### PRECAUTIONS AS TO THE LIQUID.

The tendency to crystallization of a properly modified solution of phosphoric acid calls for much care in its handling during consumption. After trying the ordinary cork, the rubber and the glass stopper, also metal screw-cap, I became satisfied that, however the bottle is originally corked, the liquid should never be used from that bottle but should be transferred to one of proper size having a telescoping glass cap instead of a cork fitting within the neck. The best of the sort obtainable is, I think, the S. S. W. No. 6 office preparation bottle. With the ordinary container, with ordinary handling, there will always be more or less liquid standing about the cork, exposed to the air, which will attract water from the atmosphere during summer months and in winter give up water to the atmosphere of an artificially heated room. In summer the diluted liquid passes into the bottle on each removal of a cork, altering the specific gravity to that extent, and in winter a crystal from about the cork may start crystallization in the main mass of liquid, which would probably have remained free of crystals if transfered to the other form of bottle, with which this could not happen. The portions of liquid for use may well be removed by means of the *clean* non-corrosive spatula which should be used for the mix. Of non-corrosive spatulas the most practical seems to be that made from a high-grade German silver, the so-called "platinoid" and white metals being apparently of this order. Platino-iridium is probably the very best combination for the purpose, and if socketed into some other metal need not be especially expensive. For a mix of cement in which a slight modification of color is not objectionable a spatula of coin silver or of an alloy of silver and copper containing the proportions giving the maximum rigidity and hardness would be beneficial from a chemical point, supposing that a slight abrasion and chemical action on the metal occur. Phosphates of these metals have a very salutary effect, whereas phosphate of iron, which is necessarily formed to a certain extent when a steel spatula is used, is very detrimental.

The mention of cleanliness in every procedure connected with a mix of cement ought not to be called for, yet since recently seeing a dentist, who has mixed cement long enough to know better, showing at a clinic his so-called new hydraulic and impervious cement and making one mix after another without cleaning his spatula and slab, it seems that a few words on this will not be amiss. The very fact that one crystal of a kind will hasten the formation of other crystals is sufficient reason for beginning a mix of cement with an immaculately clean spatula and slab.—*Cosmos.*

## BRIDGE-WORK.

### DR. J. G. FIFE, DALLAS, TEX.

The construction of the intervening teeth in bridge-work is the main point I wish you to consider; for many good bridge workers fall short of perfection here.

I will describe a process I have adopted in this work that may be of interest. Assuming a bridge is under construction extending from the second bicuspid to the second molar, the abutment crowns being in position on the model, and the model and bite attached to an articulator. First, fill the space between the abutments with soft wax, so it will not prevent the closure of the articulator. This is to hold the facing during the process of adapting it to the model of the gum. When the facing is properly fitted to the gum, it should be shortened at the occlusal end sufficiently to permit a heavy cap of gold to be placed for the purpose of forming the occlusion. This ground end should be brought to a perfectly flat surface, so that it will fit the correspondingly flat surface of the occlusal cap, thereby making a perfect joint between gold and porcelain. The facing is now to be backed with thin pure gold, invested, and 20k solder flowed heavily over the backing. This will prevent cracking the facing in the final soldering. The backing can now be perfectly burnished to the facing around the edges, and all excess be trimmed away to a nice finish with the porcelain.

This is a very important detail, as these margins cannot be properly burnished and polished after the bridge is soldered. For forming the occlusal cap the wax should be flattened so as to be on a perfect plane with the occlusal end of the facing. A copper disc corresponding to the size of the tooth to be inserted should now be fitted to the facing. The disc then is to be built up with mouldine, placed back in proper position, and closed upon, by bringing the articulator together. This cap is then run in fusible metal, a gold cap struck up, filed with 20k solder and ground to fit the occlusal end of the facing. This plan assures a perfect occlusion in the shortest possible time. The assembling of the bridge is also made easy, and if good soldering is done, and every detail in the process as described is properly attended to, you will have no open joints for food to lodge in, or be mortified by the presence of cracked facings. For such results I should think every dentist would strive to attain, even though it required more time and labor for its accomplishment; for I think our patrons have a right to expect the very best service we are capable of rendering, and it is wrong and unjust to place imperfect work when it is possible for us to do otherwise. Some good men, and capable ones, have fallen into careless habits with their work. This is not right. Let us do our best at all times and strive to constantly improve the quality of our products. Then we have a right to charge a good fee and our services will command liberal compensation.—*Texas Dental Journal.*

* * *

# SUGGESTIONS

## PRACTICAL SUGGESTIONS.

**E. A. Bogue.**

If teeth are to be used in a bridge, grind them into place before backing; grind all occlusal notches, or cut cusps, or imitation cavities, and then line with thin pure gold.

Asbestos powder, wet up with alcohol, is used to set the parts into solder, as much time is saved by this process.—*International.*

## SHARPENING INSTRUMENTS.

**F. J. Patterson.**

Disks made from emery paper Nos. 00 and ½, an inch and a half in diameter, are placed in alternate layers to about a quarter of an inch in thickness upon a disk made of tin slightly smaller in diameter than the emery disks and mounted on a screw mandrel. The tin disk serves to hold the paper disks flat while sharpening the instrument. Place the mandrel in handpiece and hold it with the left hand, leaving the right hand free to apply instrument to be sharpened in contact with the coarser grit to trim instrument to desired shape. Tear off this disk and finish the sharpening upon the finer grit. A keen, even edge can be given to the instrument in a very short time in this way.—*Review.*

## METHOD OF ATTACHING A CUSP TO A BAND.

After the cusp has been swaged and fitted to the band it can be attached in the correct relation in a very simple manner before removing the band from the model on the articulator. Arrange the cusp in its correct position on the band, place a little asbestos fiber over the occlusal surface of the cusp and close the articulator. Care must be taken that the cusp is not forced out of position when the oposite teeth are brought in contact with the asbestos. The cusps of these teeth will sink into the asbestos, holding the metal cusp firmly against the band and the articulator can be held closed with a piece of wire. The cusp and band can now be united at a convenient point with a small piece of solder and can then be removed from the model, and the soldering finished in the usual way.—*Review.*

## POLISHING PORCELAIN.

**C. F. Hartt, Chicago.**

We hear a great deal said about the necessity of fusing the surface of a porcelain inlay after it has been ground to shape in order to obtain the requisite glossy appearance, but this is wholly uncalled for. As perfect a polish may be given porcelain as can possibly be given gold or any of the metals. Grind the inlay or crown to the proper form, then go over the surface with a sand-paper disk, to be followed by a cuttlefish disk. Then take some oxide of tin polishing putty and with wooden points known as Barker's porous polishers, as beautiful a surface may be given to porcelain as can be imparted to it by the furnace. By this method inlays may be ground at will, with the perfect assurance that a satisfactory finish may be given without fusing again.—*Review.*

## CONSTRUCTION OF AN ALL GOLD BRIDGE.

**A. Owen, Cisco, Texas.**

I desire to call attention to one process of constructing an all gold bridge, that I use, and from a point of economy of time, cleanliness and strength, I think it surpasses any I have ever used. Models are made and put on articulator as for partial plate. Articulate plain rubber teeth in space to be bridged, then remove the teeth and wax from the model, invest wax in plaster, leaving teeth exposed, place rubber ring over investment and pour Mellot's metal over teeth and secure die. You may then remove teeth and wax, leaving die, around which you have your rubber. Now, with shot swaging device you can swage a piece of gold that can be articulated on a model containing crown, and filled with solder, as well as soldered to crown, and your bridge is made.—*Texas Dental Journal.*

## METHOD OF MIXING AMALGAM.

**R. L. Graber, Peoria, Ill.**

Arrange a piece of rubber dam over the palm of one hand and upon this place the alloy and mercury. Gather up the corners and edges of the rubber and twist together in the manner that a chamois skin would be used for the same purpose. Hold the twisted portion of the rubber with one hand, place the bulbous portion containing the alloy and mercury against a flat, smooth surface, and roll vigorously with the other hand. The advantages of this method will suggest themselves when tried. —*Dental Review.*

## MOUTH WASH FOR FETID BREATH.

For the purpose of preventing fetor of the breath and as an excellent mouth-wash the following combination may be employed in the strength of a teaspoonful to the cup of water:

Bicarbonate of soda, 1-6 ounce.
Saccharine, 1-6 ounce.
Salicylic acid, 1-6 ounce.
Alcohol, 5 ounces.

—*La Presse Med.*

## SEPARATING AGENTS.

**H. W. Keizer.**

I have used a great many oils and soaps, but find soft soap mixed with hot water 1 in 4 the most satisfactory. Keep in a wide-mouthed bottle and apply with a soft brush, give three coatings at intervals of about five minutes each, allow to dry, wash to remove surplus, and cast at once.

To remove the rather disagreeable taste of plaster in the mouth, one of the following aromatics may be used to suit the patient's taste:

(1) Oil of wintergreen;
(2) Oil of eucalyptus;
(3) Oil of peppermint.

In quantity, 1 to 2 minims will be found sufficient.

—*Record.*

## TREATMENT OF RECEDING GUMS.

In cases of receding gums apply glycerite of tannin (made by dissolving one ounce of tannic acid in four ounces of glycerine by gentle heat) to spongy or debilitated gums as a tonic astringent lotion. It condenses soft gums and re-establishes the nutritive functions.—*Register.*

## WAXING UP ARTIFICIAL TEETH MADE EASY.

**E. C. French.**

Take bottom of a greased tin box, put your old scraps of base plate wax in it, melt them up hot, then paint on the wax with artist's paint brush one-fourth inch wide. Keep wax hot, and laugh to think how easy you can do it.—*American.*

## CONCLUSIONS REGARDING TREATMENT OF PYORRHEA ALVEOLARIS.

**Albert Senn.**

Pyorrhea alveolaris is a purely local disease when subgingival tartar deposits are present. The general condition of the patient is, nevertheless, not without influence, but the deposits are *conditio sine qua non.*

The therapeia which it has hitherto been customary to employ—the removal as far as possible of the subgingival tartar deposits, and the dropping of medicaments into the gum-pockets—produced, at the most, only temporary results. By means of powerful cauterizing agents the purulent tissues were necrosed, and the purulent condition stopped until the cauterizing scab was pushed off.

Absolutely thorough mechanical removal of the subgingival tartar (pus-tartar) is the only means leading to permanent cure; medicaments are superfluous; syringing out with water before and after the scaling suffices.

With the instruments hitherto recommended thorough removal is only rarely possible; with my new instruments it is always possible.*

The less advanced the disease is, the younger and more powerful the individual, the easier is the treatment, and the quicker and surer the result.

After the cure has been achieved, prophylaxis is of extreme importance.

Besides the most thorough mechanical cleansing of the teeth in the morning, and especially in the evening and after every meal, an astringent mouth-wash should be used—for example, tincture of myrrh. I then prescribe with great satisfaction Unna's tooth-paste, which contains 50 per cent Kali chloricum, and is a sovereign agent against stomatitis and gingivitis (*Monatshelfte f. pract. Dermatologie,* 1893-9). An infusion of Salvia officinalis is also very useful, particularly directly after the treatment. Furthermore, the patient must make good use of his masticating apparatus; he must work with it, for in this way he will best preserve his teeth.—*Extract Quar. Circular.*

## DO WE USE THE ALL-GOLD SHELL CROWN TOO MUCH?

**F. A. Ballachey.**

It not infrequently happens that we have to remove cap crowns for the purpose of treating chronic alveolar abscesses, and where I have had to do this it almost invariably exposes a tooth which could have been and *should have been* saved by filling. I removed one only a short time ago and do not intend to put it on again, partly because it doesn't fit anyhow, and partly because I can make the tooth useful and comfortable by filling it. I believe it would be safe to say that hundreds—yes, thousands,—of teeth have been needlessly covered with shell crowns since the introduction of this system; and not only that, but they have been *actually ruined* by crowning, whereas they should have been preserved in wholesomeness and beauty by filling. I am not referring now to the all-gold cap on anterior teeth—there is no shadow of excuse for that under any consideration—but am speaking of the posterior teeth, the molars and possibly second bicuspids which are presented having from one-quarter to two-thirds of their substance lost by caries. And remember, I am not running down the system, but am deprecating the abuse of the system. The all-gold shell crown is a good thing; it is a grand thing to be able to make an old root almost as good as it ever was; but to take a tooth which might be filled and cover it up in such a way is an abuse. It should not be done.—*Extract Cosmos.*

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* The instruments referred to are similar to S. S. White's No. 90 rectangularly-bent hoe-excavators, with shanks curved at different angles.—Ed.

## ORTHODONTIA AS A SPECIALTY.

If orthodontia is to ultimately become a recognized specialty of dentistry, let the educational approaches to it be safeguarded so that the incompetent will be excluded, and none be admitted whose elementary training in dentistry has not been the broadest obtainable and thereafter ripened by the experience of practice supplemented by special study to fit him for this important work.—*Ed. Cosmos.*

## SEPARATION AND RESTORATION OF CONTACT, INSTEAD OF RADICAL EXTENSION FOR PREVENTION.

**W. J. Worsley.**

It seems to me that writers have almost, if not entirely, overlooked what I believe to be a more important factor in the prevention of recurrent caries, upon approximal surfaces of teeth, than any form of extension for prevention. I refer to adequate separation and *complete* restoration of the contact point.

With the normal space restored between the surfaces of the teeth approaching each other, a much less radical extension will suffice to bring the cavity margins upon self-cleansing areas. Having the additional space in which to manipulate the material, the average operator will be enabled to place a filling with a much greater degree of certainty that the margins will be perfectly tight when the final polish has been given. It also gives while polishing much better access to the parts requiring most attention,—namely, the gingival margin and the contact point.—*Extract Cosmos.*

## DEPTH OF CAVITY FOR INLAY-WORK.

**Dr. Capon.**

The principal difficulty in retaining small labial and approximal fillings is in not getting sufficient depth to the cavity. I invariably use in these small cavities on the labial surfaces the How system of inlays.—*Cosmos.*

## PYORRHEA TREATMENT.

**H. B. Huver.**

In pyorrhea, my opinion is that the first essential is to thoroughly cleanse the roots; the second, the washing out of these deposits, which have been removed, from the pockets. The essayist speaks of hydrogen dioxid for this use, but I am inclined to think that more harm than good is done with this agent. It is my experience with hydrogen dioxid that has led me to this conclusion. In treating cases of this character, I found that in those in which it was not used I obtained better results than in those in which it was used.—*Extract Cosmos.*

## ANTERIOR ATTACHMENT FOR BRIDGES.

Where it is necessary to use an anterior tooth as an abutment for a bridge, if the tooth be sound the attachment can be made without sacrificing the labial portion. The pulp is removed and the root filled through an opening made on the lingual surface. The lingual plate of enamel is now ground so that it presents a concave surface, the depth of the concavity depending upon the proximity of the lower teeth when the jaws are closed. Burnish a thin piece of metal (platinum or pure gold of 36 gauge) into the concavity, allowing the edges to extend far enough from the opening to insure a strong shoulder. Insert the pin into the canal through the metal, and after removing the tooth attach with solder, being careful to retain the correct relationship. The solder should be carried to the edge of the metal to strengthen it. This makes a strong attachment for a bridge, as we can insert a longer pin in the root than with the ordinary crown, and by adopting this method we preserve the labial portion of the natural tooth.—*Dental Review.*

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## HOW TO MAKE A GOOD DRILL.

E. Cunningham.

It has been recommended that old inverted cone burs and fissure burs be ground on two sides, making a hatchet-edged drill, which is useful to cut out fissures and amalgam. This instrument has the decided objection that it transmits quite a jar to the tooth when being used. A better instrument can be made by grinding two sides of a fissure bur flat and parallel, and then put a regular spear-drill point on the end. This instrument transmits no shock to the tooth, and seems to cut much better than a spear drill.

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## POISONING WITH SUPRARENAL SOLUTION.

Dr. Otto Von Furth.

The essayist calls attention to a case of injection of suprarenal solution which was followed by toxic phenomena. The injection was performed in order to arrest hemorrhage incident to urethrotomy. The hemorrhage was arrested immediately, but the patient fainted and suffered from convulsion that lasted for several hours. Dr. Von Furth calls attention to the fact that intravenous injections of small doses of suprarenal solution in animals have caused toxic phenomena, and states that subcutaneous injections are likewise followed by these toxic and dangerous symptoms. He therefore says that the use of suprarenal preparations in dentistry should certainly be carried out with caution until further experiments shall have determined the exact *modus operandi* to be followed in cases of this nature. He also refers to other cases of poisoning caused by the use in various ways of suprarenal preparations.—*Dent. Med. Wochenschrift—Cosmos.*

## ROOT PERFORATION.

**J. E. Wilkinson.**

Roots having accidental perforations from the use of canal drills often give trouble, but may usually be saved. Just here allow a protest against the abuse of canal drills. Their use is valuable but limited. They should never be used in opening up putrescent pulp canals. After thorough medication and successive treatment, they may be used, but even then with care. They are very often deflected, so that one can never afterward get a broach into the canal proper beyond that point. Where a perforation has unfortunately resulted, cleanse, apply aristol and oil of cloves, then, if possible, place a layer of tin-foil over the opening and fill carefully with amalgam. Treat the canals afterward and fill carefully. A perforation of some standing demands more patience and successive treatments to allow subsidence of tenderness and inflammation.—*Extract Dominion.*

## ODORS IN THE DENTAL OFFICE.

The odor of medicines used in the operating room should not be allowed to permeate the office. It usually arises from the waste cotton saturated in the medicine and left lying on the floor or in a waste-paper basket, and not from the bottles containing the medicine if they are kept securely corked. The odor may not be noticed by the dentist as he is constantly in the presence of it, but his patients immediately detect it as soon as they enter the office, and its effect usually creates a fear of the operation about to be performed. A suitable receptacle should be kept at hand, into which the waste cotton can be placed immediately after using, and the cotton can be destroyed before the next patient takes the chair. Where practical the window might be opened for a moment. The office should be well ventilated at all times.—*Review.*

## FACILITATING THE ADHERENCE OF CEMENT.

**R. L. Graber.**

Dry the surface to be covered with cement thoroughly in the usual way. Saturate a pellet of cotton with phosphoric acid and apply a thin coat, after which a small amount of cement mixed very thin should be placed all over the surface using the same cotton. Cement can now be mixed and applied in the usual way.—*Review.*

## LOADED LOWERS.

**E. H. Bowne.**

Loaded plates skillfully adjusted and worn persistently, make perfect work, substantially in every mouth, young or old alike, whether the mouth is flat or with a well-defined ridge, time making a flat process plate as perfect as a ridge one with persistent wearing.—*Extract Review.*

## TO REMOVE VULCANITE FROM BETWEEN THE TEETH.

**A. E. H. Leister.**

Mount a stiff fine needle in a small handle or broach holder; sharpen on two sides, and you have a useful little tool.—*Texas Journal.*

# SOCIETY

## NORTHERN OHIO DENTAL ASSOCIATION.

The forty-fourth annual meeting of this society will be held in the Western Reserve Dental College, Cleveland, June 2, 3 and 4, 1903.

The prepared program is as follows:

### PAPERS.

1. Dr. Harry L. King.................................Wellington, Ohio
"Some Observations Concerning a Dangerous Drug, with History of an Unusual Case."
Discussion opened by Drs. W. G. Ebersole, Cleveland, O.; J. W. Harris, Lodi, O.

2. Dr. C. R. Butler.......................................Cleveland, Ohio
"Eyes."
Discussion opened by Drs. F. S. Whitslar, Youngstown, O.; F. Acker, Cleveland, O.

3. Dr. C. Stanley Smith..............................Cincinnati, Ohio
"Preservation of the Dental Pulp."
Discussion opened by Drs. J. F. Dougherty, Canton, O.; J. W. McDill, Cleveland, O.

4. Dr. N. H. Bishop.....................................Andover, Ohio
"Proper Access in Preparation of Cavities."
Discussion opened by Drs. C. L. Slutter, Alliance, O.; J. W. Van Doorn, Cleveland, O.

5. Dr. H. C. Kenyon...................................Cleveland, Ohio
"Some Thoughts on Cavity Preparation."
(Illustrated with Models.)
Discussion opened by Drs. H. F. Harvey, Cleveland, O.; R. D. Wallace, Scio, O.

6. Dr. F. W. Knowlton......................................Akron, Ohio
"Phosphor-Necrosis."
Discussion opened by Drs. W. B. Connor, Akron, O.; G. B. Williamson, Akron, O.

7. Dr. J. V. Stahl.........................................Wooster, Ohio
"Alveolar Abscess and Its Treatment."
Discussion opened by Drs. H. Barnes, Cleveland, O.; Florence M. Taylor, Cleveland, O.

8. Dr. D. M. Walker.......................................Lisbon, Ohio
"Preservation of the Natural Teeth and Proper Substitutes."
Discussion opened by Drs. L. L. Bosworth, Cleveland, O.; G. E. Bishop, Cleveland, O.

9. Dr. Mary V. Hartzell..........................Minneapolis, Minn.
"Interstitial Gingivitis."

Discussion opened by Drs. W. H. Whitslar, Cleveland, O.; S. B. Dewey, Cleveland, O.

10. Dr. J. W. Hisey..................................Cleveland, Ohio
"Anomalies of Second Dentition."

Discussion opened by Drs. J. K. Douglas, Sandusky, O.; G. H. Wilson, Cleveland, O.

11. Dr. C. R. Baldwin..................................Cleveland, Ohio
"The Use of a Few Valuable Drugs in Dentistry."

Discussion opened by Drs. L. L. Barber, Toledo, O.; D. H. Ziegler, Cleveland, O.

12. Dr. F. F. Chapman................................Cleveland, Ohio
"My Method of Making a Bicuspid Crown."

Discussion opened by Drs. F. L. Miles, Cleveland, O.; M. C. Ramaley, Cleveland, O.

13. Dr. J. F. Siddall......................................Oberlin, Ohio
Poem—"Von Letel Poy."

14. Voluntary Papers.

## CLINICS.

1. Dr. F. W. Knowlton....................................Akron, Ohio
"Phosphor-Necrosis Case."

2. Dr. D. A. Allen.........................................Toledo, Ohio
"Some Little Tricks."

3. Dr. H. E. Dunn.........................................Warren, Ohio
"Making an Electric Furnace."

4. Dr. C. B. Mower......................................Wooster, Ohio
"Use of the Pneumatic Plugger."

5. Dr. M. C. Ramaley.................................Cleveland, Ohio
"The Ideal Crown and the Method of Making It."

6. Dr. H. G. Husted......................................Oberlin, Ohio
(Subject to be announced.)

7. Dr. Frank Noville.....................................Cleveland, Ohio
Inlay (Porcelain).

8. Dr. George H. Wilson..............................Cleveland, Ohio
"Vulcanite."

9. Dr. Frank F. Douds...................................Canton, Ohio
"Contour Filling in Upper Central Incisor."

10. Dr. George F. Woodbury.........................Cleveland, Ohio
Difficult Metal Cusps Made Easily and Quickly."

11. Dr. E. B. Lodge......................................Cleveland, Ohio
"The Technic of Applying Cataphoresis to Difficult Cases."
"Using the Price Instrument."

12. Dr. W. A. Price.......................................Cleveland, Ohio
"The Technic of Taking Skiagraphs."

13. Dr. F. W. Stephan...................................Chicago, Ill.
"Some Interesting Models."

14. Dr. W. H. Fowler..................................Painesville, Ohio
"Dr. Fowler's Favorite Plugger."

15. Voluntary Clinics.

## NEBRASKA STATE DENTAL SOCIETY.

The annual meeting of the Nebraska State Dental Society will be held in Lincoln, Neb., on May 19-22, 1903. A large attendance is looked for. An excellent program has been prepared and is in part as follows:

PAPERS:—1. "A Severe Case of Alveolar Hemorrhage in Practice," E. H. Naumann, Columbus, Neb.; 2. "Diseases of the Antrum," R. D. Messler, Falls City, Neb.; 3. (Title not given) W. C. McHenry, Nelson, Neb.; 4 (Title not given) D. J. McMillan, Kansas City, Mo.; 5. "Abscessed Teeth and Their Treatment," T. W. Bass, Broken Bow, Neb.; 6. "The Baking and Tempering of Porcelain Bodies," A. O. Hunt, Omaha, Neb.; 7. "Observations on the Expansion of Plaster of Paris," J. H. Prothero, Chicago, Ill.; 8. "A Few Important Principles of Cavity Preparation and Instrumentation," W. E. Harper, Chicago, Ill.; 9. (Title not given) W. C. Davis, Lincoln, Neb.; 10. (Title not given) E. C. Field, Lincoln, Neb.; 11. "Essential Oils," J. R. Shannon, Weeping Water, Neb.; 12. (Title not given) J. M. Borus; 13. (Title not given) H. R. Hatfield, York, Neb.; 14. (Title not given) J. M. Barnes, Albion, Neb.; 15. "Illustrated Lecture on Tissue Structure," O. R. Kelley, Omaha, Neb.; 16. (Title not given) J. S. McClary, Beatrice, Neb.; 17. (Title not given) H. T. King, Fremont, Neb.

CLINICS:—"Treatment of an Abscessed Tooth," E. A. Messervey; "Amalgam Filling with Veneering, a New Process," W. A. Ivory; "Noncohesive Gold Filling," J. H. Whetmore; "Treatment of Abscessed Tooth with Sulphuric Acid, C. C. Farrell; "Porcelain Crown, Turner Method," A. Gaiser; "Demonstration of the Turner Porcelain Furnace," A. Gaiser; Clinic by D. J. McMillan; "Gold Filling in Bicuspid Tooth," W. T. Smith; "Porcelain Bicuspid Crown," J. H. Naviaux; "Demonstration of the Cohesiveness and Adaptability of Fiber Gold," W. R. Smith; "Jenkin's Inlay System," F. N. Conner; "Bleaching Teeth with Peroxid of Sodium," W. H. Sherradin; "Porcelain Inlay, New Method of Anchoring," F. D. Sherwin; "Porcelain Bridge Technic," F. D. Sherwin; "Amalgam Crown," H. F. Helms; "Root-canal Filling with Aristol and Clove Oil," L. P. Davis; "Platinized Gold Fillings," L. P. Davis; Simple Method of Root-canal Filling," A. P. Johnson; "Full Gold Bridge," A. W. Nason; "Gold Filling," J. M. Lucas; "Porcelain Bridge," A. O. Hunt; "Simple Method of Swaging Backings for Facings," E. G. Antrum; Clinic by J. M. Borrus; "Demonstration of Aura-Percha," C. O. Metzler; "Amalgam Filling," H. W. Shriver; "Micrometer Tests of Expansion of Plaster," J. H. Phothero; "Table Clinic on Cavity Preparation and Instrumentation;" "Suggestions on Excision of Crowns," W. A. Harper; "Setting Cogswell Crown," B. L. Spellman; "Cogswell Crowns in Bridge-work," C. A. Spellman; "Porcelain Crowns and Bridges," T. J. Hatfield; Clinic by J. S. McClary.

## LAKE ERIE DENTAL ASSOCIATION.

The next annual meeting of this association will be held at Hotel Rider, Cambridge Springs, Pa., May 19th, 20th and 21st 1903

This will be the fortieth anniversary, and the members expect to make it the most enjoyable meeting that has ever been held by the Association, as a regular program of amusements, as well as dental arts and clinics has been fully arranged for. CHARLES D. ELLIOTT,

*Secretary.*

## KENTUCKY STATE DENTAL ASSOCIATION.

The time of meeting of this society has been changed to May 25th, 26th and 27th, 1903. The meeting will be held in Bowling Green, and an invitation is extended to members of the profession. C. R. SHACKLETTE,

*Secretary.*

## SECTION OF STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION.

The next meeting of this Association will be held in New Orleans, May 5-8, 1903. Among the essayists are: E. S. Talbot, M. H. Fletcher, O. N. Heise, H. E. Baldwin, Richard Grady, C. C. Chittenden, G. V. I. Brown, A. H. Peck, H. Prinz, G. F. Eames, A. M Stevens, V. A. Latham, J. Choquet, France; D. E. Carish, England; J. Choquet, France; M. Morgenstein, Germany; Oscar Romer, Germany.

## MISSOURI STATE DENTAL SOCIETY.

The Thirty-ninth Annual Meeting of the Missouri State Dental Association will be held at Kansas City, Mo., May 19, 20, 21.

Reduced railroad and hotel rates have been secured and a very large attendance is assured.

All ethical members of the profession are cordially invited to attend, become members and take part in the discussions.—OTTO J. FRUTH, *Corresponding Secretary.*

## ARKANSAS STATE DENTAL SOCIETY.

The annual meeting of this Society will be held at Little Rock, Ark., May 12-14, 1903. A cordial invitation is given the profession.—W. T. Rowland, *Secretary.*

## PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, June 9-12, 1903.

Address the Dental Council, Harrisburg, Penna., for application papers and further particulars.—G. W. Klump, *Secretary,* Williamsport, Penna.

## NEW JERSEY STATE BOARD OF REGISTRATION.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semiannual examination on July 7, 8, 9, 1903, in the Assembly room of the State House at Trenton, N. J. Sessions beginning promptly at 9 a. m.

All applications must be in the hands of the Secretary 10 days prior to the examination. J. A. Osmun, *Secretary,* Newark, N. J.

## OHIO STATE EXAMINING BOARD.

The Board of Dental Examiners of the State of Ohio will meet at the Hartman Hotel, Columbus, June 30, July 1 and 2 for the purpose of examining candidates for certificates of registration.

All applications should be filed with the Secretary by June 20th.

For further particulars address H. C. Brown, *Secretary,* 112 East Broad St., Columbus, Ohio.

## ILLINOIS STATE DENTAL SOCIETY.

The thirty-ninth annual meeting of the Illinois State Dental Society will be held in Bloomington, May 12, 13 and 14. A large program of interesting essays and clinics has been prepared, and a splendid meeting is expected.

The railroads throughout the state and from St. Louis will make a rate of a fare and one-third, certificate plan, for the round trip. All are cordially invited. Remember the date.—A. H. Peck, *President.* Hart J. Goslee, *Secretary.*

## DENTAL COMMISSIONERS OF CONNECTICUT.

The Dental Commissioners of the State of Connecticut will meet at Hartford, May 21, 22, 23, 1903, to examine applicants for license to practice dentistry, and for the transaction of any other proper business.

The practical examination in operative and prosthetic dentistry will be held Thursday, May 21, at 9 a. m., in Putnam Phalanx Armory, corner Haynes and Pearl streets.

The written theoretic examination will be held Friday and Saturday, May 22 and 23, at the Capitol.

All applicants should apply to the Recorder for proper blanks, and for the revised rules for conducting the examinations.

Application blanks must be carefully filled in and sworn to, and with fee, twenty-five dollars ($25.00), filed with the Recorder on or before May 16, 1903. By direction of the Dental Commissioners. J. Tenney Barker, *Recorder*, 8 North Main street, Wallingford.

# OBITUARY

## DR. OTTO ARNOLD.

Dr. Otto Arnold died at his home, Columbus, O., April 1st, 1903, in his forty-ninth year. He was born in Buffalo, N. Y., April 21st, 1854. His father, a German physician and surgeon, came to America a few years before, being one of the many unsuccessful revolutionists for freedom in the latter part of the forties in Germany. Otto Arnold's boyhood days were spent in Ironton, O., excepting a year or so in New Orleans for his health. He early evinced a desire for dentistry and was under the tutelage for several years of Dr. Sloan, of his home town.

He graduated from the Ohio College of Dental Surgery in 1879. The next six years he practiced at Ironton, O.

In 1882 he was married to Jessie Johnson, of the same town. She, with their daughter, Louise, survive him.

In March, 1886, he moved with his family to Columbus, O., where he has been in continuous practice ever since. In society work he was ever active and zealous, and was a charter member of several. His name is enrolled in the American Dental Association, Mississippi Valley Association of Dental Surgeons, Ohio State Dental Society, Tri-State, the Columbus Dental Society and others. From 1897 to 1901 he was the dean of the Dental Department of the Ohio Medical University. In 1901 the Ohio State Dental Society elected him their president for the ensuing year. In 1890 he represented the National Association at the International Dental Congress in Berlin, Germany.

For several winters past Dr. Arnold has been accustomed to spending several months in the south and west in quest of better health, and had returned from Arizona but two weeks before his death. His burial took place on April 4th, 1903, at his old home, Ironton, O. S.

# AFTERMATH

## PERSONAL AND MISCELLANY.

Died.—Dr. G. H. Crary, of Red Wing, Minn., died March 27th.

Dr. Frank Mulholland Dead.—Dr. Mulholland, Manitowoc, Wis., died March 14th, age 36.

Robbed.—The dental office of Dr. Miner, Hutchinson, Kan., was robbed April 2 of $25 worth of gold.

Married.—Dr. W. S. Flower and Miss Elnora Lockhart, both of Pittsburg, were married March 28th.

Died.—Dr. S. L. Mintzer, a well-known dentist of Southwark, Pa., died March 24th at the age of 83 years.

Removed.—Dr. Barker, of Peoria, Ill., has located in Bloomington. Dr. Trinkaus, of Peoria, has moved to Elkhardt, Ill.

Dr. Otto Arnold Dead.—Dr. Arnold, Columbus, O., a well-known dentist, died of tuberculosis April 2. Age 49 years.

Abandoned Practice.—Dr. Robert Hunt has abandoned practice in Denver, Col., to accept a position in an assay office at Pueblo, Col.

Dentists Robbed.—Drs. Little and Darling, Saint Paul, were robbed of a small amount of cash and $500 in non-negotiable notes and securities.

Fined for Practicing Without a License.—J. C. Feeley, Minneapolis, was fined $25 and costs, April 3, for practicing dentistry without a license.

Doctor Griswold Dead.—Dr. Griswold, who was serving the last of a term of ten years in the penitentiary at Hartford, Conn., for arson, died March 2nd.

Loss by Fire.—Dr. C. H. Chance, Seattle, Wash., and John Welch, dental dealer, sustained losses by fire March 21st. The former, $3,000, and the latter, $30,000.

Badly Burned.—While attending a furnace, Dr. Peter Brown, Oshkosh, Wis., was severely burned about the face and chest by an explosion of accumulated gas.

Dental Robber Caught.—Fred Johnson robbed the dental parlors of Dr. McDowell of Racine and attempted to dispose of the plunder at Waukegan. He was arrested

DENTAL OFFICES ROBBED.—At Vincennes, Ind., the dental offices of Drs. Frank Anderson and O. W. Willies were robbed March 7th, of $200 worth of gold and $50 in money.

BANQUETED.—Dr. S. A. Freeman, Buffalo, was tendered a banquet March 31st, by about one hundred dentist friends. Dr. Freeman has been in practice about 40 years.

FINED FOR PRACTICING WITHOUT A LICENSE.—Dr. E. B. Hunter, Brooklyn, N. Y., was fined $100 for practicing without a license. This was the second conviction for Hunter.

A POPULAR MAYOR.—Dr. H. J. Burkhart has just been re-elected Mayor of Batavia, N. Y., by the largest majority a mayor ever received in that town. He carried every ward by a substantial majority.

DOCTOR S. B. PALMER DEAD.—Dr. S. B. Palmer, one of the best known and oldest dentists of New York State, died at his home in Rochester, March 30th. He retired from practice February 23rd, having practiced dentistry fifty years.

CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.—The following officers have been elected for the ensuing year: W. H. Pruden, President; C. W. Hoblitzell, Vice-President; C. A. Meeker, Treasurer; F. W. Stephens, Secretary.

VALUABLE LECTURES.—Dr. I. C. Eddington, Rochester, N. Y., gave a lecture on "Teeth in Health and Disease," before the School Mothers' club, March 14th. This was one of a series of lectures given under the auspices of the Rochester Public Health Association.

ODONTOLOGICAL SOCIETY OF WESTERN PENNSYLVANIA elected the following officers for 1903: President, Dr. C. C. Taggart, Pittsburg; Vice-President, Dr. George W. Gage, Pittsburg; Secretary, Dr. B. M. Loar, Mt. Pleasant; Treasurer, Dr. J. A. Libby, Pittsburg.

DR. S. J. KENNEDY GOES FREE.—Dr. Samuel J. Kennedy, the Staten Island dentist who was charged with the murder of Dolly Reynolds at the Grand Hotel, in 1898, was discharged by Judge Cowing in Part I of the Court of General Sessions this morning and the indictment against him was dismissed.

MRS. A. H. THOMPSON DEAD.—The friends of Dr. A. H. Thompson, Topeka, Kan., will be pained to learn of the death of his beloved wife. Her death coming so soon after the loss of an only daughter makes Dr. Thompson's loss doubly severe. We extend our sympathies to the doctor in his affliction.

DENTAL INSPECTION IN GERMANY.—The question of engaging a special staff of dentists to examine periodically the teeth of the children in the primary schools in Berlin is occupying the attention of the authorities. Dental inspection has been already introduced into the schools at Gleiwitz. It takes place once a year.

REPRESENTED THE UNITED STATES AT THE INTERNATIONAL MEDICAL CONGRESS.—On recommendation of Senator Depew Drs. H. J. Burkhart, Batavia, N. Y.; William Carr, New York City; E. C. Kirk, Philadelphia, and G. V. I. Brown, Milwaukee, were appointed delegates to represent the United States at the International Medical Congress, held at Madrid, Spain, in April.

DENTIST BADLY BURNED.—Dr. F. A. White, Wichita, Kan., was doing some mechanical work in his workshop and in using the bellows on the gasoline flame the stove blew up and set fire instantly to everything in the room. Dr. White was burned terribly, the flesh on his face being ready to drop off. His eyebrows and hair were entirely burned off. It is said that he will recover.

DIED AFTER HAVING TEETH EXTRACTED.—Mrs. A. K. Ives, New Orleans, La., died March 21, after returning from her dentist's. Mrs. Ives addressing an old friend of the family, said that she had experienced absolutely no pain. A few moments later she was seized with a terrible pain in the head and soon became unconscious. Four physicians were summoned, but they were unable to relieve her sufferings, and she died at 3 o'clock this morning. Anaemia of the brain is what the doctors say was the immediate cause of death.

SETTLEMENT OF THE T. W. EVANS' WILL SUITS.—The final settlement of the suits instituted by heirs of Dr. Thomas W. Evans, the millionaire dentist, formerly of this city, awards to R. H. Evans, of Washington, D. C., one-third of $800,000. R. H. Evans is a brother of the eccentric millionaire. He is 89 years old, and lives at Chevy Chase. He is the father of Dr. W. Warrington Evans, of Washington. Dr. W. Warrington Evans, son of R. H. Evans, explained that his father received $20,000 direct by the will of Dr. Thomas W. Evans, as did he himself.

TRAVELED FOUR THOUSAND MILES TO HAVE A TOOTH EXTRACTED.—Rev. W. W. Waddell, a Presbyterian missionary stationed in the interior of Brazil, about seven months ago noticed a slight swelling and soreness in his lower jaw. It got worse and he went to the best physician in Bahia. He made a microscopic examination and told the minister he had cancer. The minister is poor, but he and his wife decided to save his life he should make every sacrifice. So at great hardship and with difficulty he raised the amount to come to New York. There he consulted a dentist who extracted an abscessed tooth for him and the trouble disappeared.

INTER-STATE DENTAL FRATERNITY.—A new dental fraternity has just been organized in New York City by prominent dentists there. The object is to bring the members together socially and further an acquaintance with each other. Members will be taken from all States of the Union, but must be recommended by some one already a member and obtain nine-tenths of the votes cast to become elected. Section or State meetings will be held as often as desired, but the annual meeting will be held each year at the time and place of the National Dental Association. The meetings will consist of a banquet and such social features as may be decided upon.

VERMONT STATE DENTAL SOCIETY OFFICERS.—At the twenty-seventh annual meeting of the Vermont State Dental Society held at Burlington, March 18-20, 1903, the following officers were elected for the ensuing year:

President, Dr. J. Holmes Jackson, Burlington; First Vice-President, Dr. H. Burbridge, Woodstock; Second Vice-President, Dr. Geo. F. Barber, Brattleboro; Secretary, Dr. Thomas Mound, Rutland; Corresponding Secretary, Dr. Grace L. Bosworth, Rutland; Treasurer, Dr. W. H. Munsell, Wells River; State Prosecutor, Dr. J. A. Robinson, Morrisville; Executive Committee, Dr. Geo. O. Mitchell, St. Albans; Dr. J. Churchill Hindes, Vergennes; Dr. C. H. Kent, Barre. The next meeting will be held at Montpelier, the third Wednesday in March, 1904.

Wiles of the Widow.—The lady whose teeth dropped into her plate while she was dining at the Criterion restaurant, in London, brought suit against her dentist. It was, however, stated in evidence that she had, at a time when the teeth were in the earliest bloom of their youth, written the following warm testimonial to her dentist: "You have altered my appearance. I look quite a different woman, and I shall be able to get another husband. My daughters will not be able to have it all their own way now." The *London News* remarks that the warning of the elder Weller against widows receives some support from the remarkable document just quoted. The same philosopher's contention that one who understood horses understood humanity receives, at the same time, a limitation. Any attempt to guess the age of a person from the appearance of the teeth, as is done with horses, would only lead to an error in such a case as this.

Recent Patents of Interest to Dentists.—

721,528, Rack for holding false teeth, Ormond E. Wall, Honolulu, Hawaii.

721,655, Tooth regulator, Edward H. Angle, St. Louis, Mo.

722,033, Dental clamp, Wm. A. McCarter, Topeka, Kans.

723,134, Automatic Mallet, Arthur W. Browne, Princebay, N. Y., assignor to S. S. White Dental Manufacturing Co., Philadelphia, Pa.

723,135, Sleeve for flexible shafting, Arthur W. Browne, Princebay, N. Y., assignor to S. S. White Dental Manufactunirg Co., Philadelphia, Pa.

722,699, Tooth-powder box, Wm. H. Hall, New York, N. Y.

722,726, Dental flask press, Theodore G. Lewis, Buffalo, N. Y.

722,765, Dentist's flask, Andrew S. Steigerwald, Philadelphia, Pa.

723,102, Artificial tooth, Thomas H. Whiteside, Youngstown, Ohio.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

Difficult Tooth Extraction.—Recently at a St. Louis Zoo, it was decided to extract a carious tooth for an elephant. This elephant is ordinarily of a mild disposition, but of late it has been a terror to the attendants. Wednesday it broke its chains and would have done serious damage had not an attendant been on the spot. It was so crazed with pain that an examination of its mouth was made by the animal keeper who found that one of the animal's molars was badly decayed. Col. George Forepaugh confirmed the diagnosis and asked the proprietor of the Col. Ferari Zoo to try to extract the tooth. Preparations for the operation were made on Wednesday and blocks and tackles put in readiness. Two turns of large insulated copper wire were placed around the tooth and the ends of the wire passed through a ring on the tackle. The elephant was tied to the side of the building. Twelve men took the end of the wire and at a signal gave a mighty yank. The tooth came out and the enraged and pained animal emitted a scream that was appalling. On examining the tooth, which was six inches long and two inches in diameter, it was found to be decayed for fully half its length. The operation was more than successful, for the elephant immediately quieted down and suffered itself to be led back to its old quarters.

Huge Dental Trust Bankrupt.—The Daly Gold Lining Dental Company, which planned to establish a corporation to control the profession of dentistry from the Atlantic to the Pacific, is admitted by the general manager to be bankrupt. He supplements the statement with the assertion in open court that all the furniture and other assets of the company are his personal property, and that the corporation has no assets on which execution can be levied. The nominal capital was $500,000, and the prospectus said it was safe to estimate the annual profits from the branch offices it was proposed to establish all over the country at $2,000,000. The venture is described as a "consolidation of dentistry," and as a warning to those who stayed outside the trust it was written: "A successful issue of our efforts will secure the extermination of that growing imposition, the dental parlors, which, pirating as they do upon the dental profession, threaten soon to become a deep-rooted evil and a menace to the community at large." For the benefit of the community and of the shareholders of the Daly company it was proposed to buy out leading practitioners in the principal cities, and, while leaving them to carry on the business and maintain their clientelle, secretly to pool the receipts, and, incidentally, exterminate opposition. "The profits on even a minimum charge of dentistry have been computed to exceed 700 per cent.," the shareholders were informed, and figures given from the census reports showing 612 towns with populations exceeding 5,000, which would be the field for the trust's operations. The estimated net profits range from $1,250 in the case of the smaller towns to $39,461 where a population of more than 1,500,000 is available, and, with delightful precision, the total annual profits (estimated) are placed as $1,718,495. A number of capitalists of Brooklyn and other cities are said to have been interested in the scheme. Dr. Albert Westlake, of Chicago, who brought suit against the company before Judge Haskell, said he had been induced to lend his services, but had been unable to obtain any compensation for his work. No one contested the case, and judgment was entered.

# DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

## INFECTION.

BY ELGIN MAWHINNEY, D. D. S., CHICAGO.

Professor of Special Pathology, Materia Medica and Therapeutics,
Northwestern University Dental School.

To infect means to introduce into the tissues a poison or virus which has the power of invading and multiplying, thereby setting up serious disturbances of physical well-being. This disturbance may be local only, or it may effect the whole organism as well; indeed, it is certain if the local infection is violent, that the system as a whole will suffer.

This is a subject upon which much has been written of late years, and yet I am of the opinion that the profession does not appreciate its importance. I have formed this opinion as a result of many years' experience in directing the treatment of cases in a large public infirmary, as well as in private practice, to both of which many serious cases are sent by regular practitioners. I think it is true that most dentists have learned to recognize syphilitic cases, and are fully aware of the dangers of infecting themselves and others from them; also I believe that a large majority understand the precautions that are necessary in order to avoid doing so, and is it not a fact that a majority of dentists regard this disease as the only source of danger? I am certain they practice as if they do. This article is written to point out some of the most common ways in which we may infect pulps, gums, or other tissues of the mouth, and to suggest a method to avoid doing so.

Infection depends upon certain things, among which are:

1. The nature and condition of germs infecting—with reference to virulency.

2. The condition of the part through which infection occurs, with reference to location, cellular elements of the tissue as well as its chemistry.

3. The condition of the system as a whole, with reference to nutrition, including assimilation, excretion and metabolism. When the normal physiological functions are disturbed, infection takes place more readily.

All agree that the mouth is usually a "hot-bed" of micro-organic life; almost every known variety there abound. Were it not for the fact that the saliva is normally antiseptic to a slight degree, and is constantly moving, we would have more difficulty in getting open wounds in the mouth to heal. In this sense nature favors healing. When tissue becomes injured, abraded or loses its vital force, and infectious material is confined within or retained upon it for a period of time, of course the liability of infection increases; for these reasons I want to call attention to the advisability of thoroughly cleansing surfaces through which hypodermic needles, lancets or exploring needles are to be introduced. Surgeons quite universally take these precautions, but how many dentists do? How many are in the habit of forcing needles or lancets through surfaces that are covered with all sorts of infectious material? When pain, soreness and sloughing follow, we wonder why. Before scaling teeth, how many take the precaution to first rid the mouth of all putrefactive material lying upon the gum margins or around the necks of the teeth? When you think of it, how important it is! How many take the same precautions before placting a rubber dam clamp aroung the necks of teeth? In the majority of cases that instrument injures the gum, and with the rubber dam, retains the infectious material in contact with it for the length of time required for the operation. The same is true of rubber dam when applied alone or with ligatures, but to a less degree. The danger is even greater when wedges or separators are used. A rule, then, I would like to advance is:

Always cleanse the teeth and gums, especially around the gum margins, of all particles of food and putrefactive debris before beginning any operation. The most particular attention should be given the teeth in the immediate field of operation. For this purpose I first use a ball of cotton in the pliers, saturated with dioxygen and carrying a little fine powder. With this I scrub the teeth and gums; then I use a compressed air atomizer and wash out the interproximate spaces with an antiseptic solution. I thoroughly flood the mouth, depending as much on the mechanical cleansing as on the antiseptic wash. With this method you can feel reasonably certain that you have reduced the liability of infection to a minimum, and it only requires a minute. In operating on teeth, especially where the pulp is involved, I take the additional precaution of washing off the teeth with alcohol after the rubber dam is in position.

### CARRYING INFECTION.

In scaling teeth is is important to keep the instruments in a good germicidal solution, and do not carry scalers from a pus pocket on one tooth to another tooth without first wiping off and dropping it into the solution. I am thoroughly satisfied that many carry infection from such pockets to the healthy peridental membrane on other teeth by carelessness in this regard.

### A GERMICIDAL SOLUTION.

As a germicidal solution I use sublamine, one in two hundred, and for the purpose of wiping off the scalers I use small squares of chinosol gauze. I attribute much of my success in treating "pyorrhœa alveolaris" to these precautions.

My brother, I want to interrogate you again; you see I am after you. How often do you take a nerve broach from a putrescent canal and carry it up into a pulp you have devitalized, or a clean canal, without sterilizing it? Take a case, we will say an upper first molar with three root canals, one putrescent or filled with pus, the others clean, perhaps made so by you; now, honestly, don't you frequently take your broach from the putrescent canal and carry it into the others without first sterilizing it? Don't you sometimes take a broach from a pus-filled canal and carry it into a canal in a neighboring tooth where you are removing a non-infected pulp? How often do you wind cotton on a broach with unclean fingers, and carry this into clean canals? Perhaps you don't, but the majority of practitioners do. Then they wonder why teeth become sore after pulp removal. Many think they sterilize their broach when they dip it into oil of cloves, cassia, or such agents, and leave it there a few seconds, but I assure you they don't.

### BROACH STERILIZATION.

For the purpose of getting some fairly accurate information regarding broach sterilization, I undertook a series of experiments. The method was this: I took small pieces of broaches, both steel and iridio-platinum, and sterilized them by heat to redness. When cool, which only took a few seconds, they were carried into foul root canals, pus pockets, abscesses, and ulcers, then dipped into various agents and left various lengths of time, after which they were removed, washed and dropped into tubes containing beef bouillon culture media, and readings made from time to time for 96 hours. Test tubes were made from each pus case used, and microscopic comparisons frequently made. The length of time broaches were kept in the medicant was gradually increased until no cultures were obtained. The table of results follows and is self-explanatory:

| Medicament. | Time required to sterilize broach. | Medicament. | Time required to sterilize broach. |
|---|---|---|---|
| Oil of Cloves | 37 min. | Trikresol | 5 min. |
| " Cassia | 35 " | Creolin, | 5 " |
| " Peppermint | 40 " | Sublamine, 1 in 200 | 2 " |
| " Sassafras | 42 " | Chinosol, 10 per ct. solution. | 1 " |
| " Cade | 25 " | Dioxogen | 25 " |
| " Birch tar | 25 " | Bichloride of Mercury, 1 in 500 | 10 " |
| " Wintergreen | 60 " | | |
| " Cajaput | 30 " | Campho-phenique | 20 " |
| " Cinnamon | 40 " | Hydronaphtol, 20 per cent. in alcohol | 20 " |
| " Eucalyptus | 45 " | | |
| Carbolic acid | 20 " | Beta-naphtol, 20 per cent. in alcohol | 32 " |
| Creosote, Beechwood | 25 " | | |

These tables only prove so far as small broaches are concerned, but not for larger instruments, although they will readily show what agents would likely to be most effective for such. They show the absurdity of attempting to sterilize an unclean broach by simply dipping it in any of the essential oils, or in fact any but a very few agents. Chinosol, ten per cent., proved most efficacious, but cannot be used for steel, as it corrodes it, but for other metals it is very valuable. Corrosive sublimate has the same objection. Carbolic acid, trikresol, and the like, are too irritant to be carried into soft tissue by instruments, and unless you wanted their special escharotic effects in a root canal, you would scarcely like to dip broaches in them. From my experience I recommend the use of sublamine, 1 in 200 for steel instruments, chinosol, 10 per cent., for those of other metals.

### INSTRUMENT STERILIZATION.

The most practical method of sterilizing instruments after each case is by boiling in water containing a slight amount of sodii bicarbonatis, for which purpose I have had made a small sterilizer, consisting of a zinc box with a tight-closing lid four inches wide, eight inches long and seven inches high, into which a removable tray is fitted and arranged so the instruments will stand upright. This box rests upon a standard and has a gas jet underneath. I had it made by a tinsmith at an expense of $7.00, and I think it fills the requirements better than any other. It does not heat the room to any great extent, is sightly and very convenient, and inexpensive to run. If instruments are boiled it it for 15 minutes, you can be reasonably sure they are well sterilized.

The instruments we need to be most careful about sterilizing are:

Clamps, separators, files, reamers, trimmers, scalers, lancets, needles, broaches. The simplest, easiest and surest way of doing so is by boiling. Before boiling they should be well scrubbed with soap and water. Try the precautions herein suggested and you will be delighted—at least they are very helpful to me.

# ORAL PROPHYLAXIS OR PREVENTIVE DENTISTRY.

BY C. M. WRIGHT, A. M., D. D. S., CINCINNATI, O.

Professor of Physiology and Pathology, Ohio College of Dental Surgery.

An editorial in THE DENTAL SUMMARY of November, 1902, on "The Results of Compulsory Dental and Oral Prophylaxis," furnishes a valuable contribution to science. It presents facts as observed by an intelligent dentist in regard to the results of expert care and attention to the teeth and gums of a class of work-people—men, women, boys and girls, who are placed in an environment of especial danger to these particular organs.

We are all familiar with the general proposition that the employees of match factories are liable to a dread disease known as phosphor-necrosis, and the editor has shown that the Diamond Match Co., recognizing this fact, has employed dentists to rigidly and systematically examine and make tabulated reports of the condition of the mouth of every employee. The employee must submit to this examination and follow the instructions of the examiner under penalty of discharge for neglect. Permit me to quote a sentence or two from the editorial:

"Especial attention is given to keeping the teeth free from calcareous deposits and the gums in a normal condition. Every employee is obliged to brush his teeth and gums at least once a day and use such mouth-washes and dentifrices as are prescribed by the examiner. At his next visit the examiner compares the work done, with his last instructions as entered in his record book.

"By this strict supervision over the oral cavity, phosphor-necrosis, which used to be common among match-workers, has been almost entirely stamped out. Dr. Knowlton (Dr. F. W. Knowlton, dental examiner for the Diamond Match Co.) having only four mild cases at present among the two thousand employees.

"Aside from limiting this dread disease, this compulsory phrophylaxis has been of great benefit to every employee and an educator of no small proportions."

The presentation of such observations to the dental profession is particularly apropos, for in Europe and America the subject of how best to promote dental and oral prophylaxis is on the carpet as the problem of the day.

We as a profession are interested in the solution. Some countries and states are making endeavors toward compulsory methods by law, to be effective in the public schools and government offices. Others having an instinctive aversion to the paternal side of governments, are making efforts to educate the people by private pamphlets and tracts on medical and dental subjects. A few dentists of skill and experience are specializing their daily work and are devoting more and more time to this one branch of practice, viz: The removal of deposits from the teeth and the expert polishing of all the surfaces not closely protected by gum tissues.

This latter class of dentists become enthusiastic after a few months or years of this special work, and relate stories of almost marvelous results in the improvement of the health, and the prevention of oral and dental lesions.

Such reports then as the editor gives of the results of Dr. Knowlton's work, are not only gratifying but of particular interest in helping to solve this problem of the day.

I suppose that if the question could be asked at any dental meeting in any country, "What do you believe to be the first and best method of preserving the human teeth?" the answer would be, "Keep the teeth and gums clean."

The proposition that, "a clean tooth will never decay," has been floating about through dental literature and in our minds, like wandering cells or leucocytes, for years. It is a fundamental truth. Yet patients of dainty habits and scrupulous notions about cleanliness, present themselves to us with decaying teeth, with spongy gums, with calcareous salivary and serumal deposits, and tell us of their daily, diurnal triurnal or sexurnal struggles with the tooth-brush and Listerine, or Vegetol or some other well-advertised and promising mouth-wash.

Years ago, while practicing on the border of France, some French patient would exclaim to me nearly every day: "How is it Monsieur le docteur, that my teeth decay, when I use Eau de Botot?" To-day people ask the same question and boast that they use Listerine by the gallon, and yet, their teeth require filling. Have we not taught these good people how to clean their teeth and care for their gums—as Dr. Knowlton seems to have done with the match-makers?

If we read the editorial superficially, we shall infer that tooth-brushes and prescribed mouth-washes were the principal factors in the improved state of oral health of these employees, but if we read carefully and between the lines, we shall recognize the fact, that it is the *frequent inspection* and the compulsory expert dental service at short intervals that is the prime factor.

This brings me to the subject I have been harping upon for some time in papers and discussions, and that is, that as a profession, we have neglected the operation of attending to the toilet of the mouth, throwing the responsibility of it upon the patient with his unskillful use of the brush, and his liberal use of mouth-washes and dentifrices.

We have been far more interested in repairs with gold, in crowns, or inlays, or "extensions for prevention," than we have in the irksome, fundamental, thorough, and frequent prophylactic surgery of removing accretions, calcareous and fermentable, by methods now practiced by a few skillful specialists in this line.

In view of the picture the editorial presents to us, of the results of compulsory prophylaxis among the army of workers in a match factory, we may hope for improvement in the schools of the different countries of Europe, where just such measures are being tried, but we cannot *compel* American citizens, or private school children, or dentists even, to submit to inspection, and to enforced dental operations. The average citizen is not afraid of phosphor-necrosis, but a great many are extremely anxious about saving their teeth. They submit to tedious and costly operations of filling, and for regulating and bridging, and a large body of intelligent practitioners is kept busy in every civilized country in attending to these demands of the people.

Yet with all this operating upon teeth, with all these improvements in the science and art of dentistry, the most logically important measure for salvation from and prevention of disease of the teeth and gums is practically neglected. The dentist presents his patient with a tract on "The Care of the Teeth," recommends a tooth-brush, powder, and floss-silk, and washes his hands of all responsibility.

Perhaps every six months or so he scales the visible "tartar" from the teeth and runs a brush-wheel or a wooden disk as an engine point, over the teeth, and scolds his patient for not giving enough care at home, to his mouth. Then he tells him to visit him again in six months (!) and feels quite easy in conscience.

But to the awakened, cultivated conscience, such care and such advice is criminal. The dentist himself cannot *clean* his own teeth with a brush and powder. He cannot keep off accretions of even the coarser kinds of calculus, not to mention the more subtle adhesions of placques and deposits of "serum tartar."

The dentist as a rule requires filling and bridges and plates as often as does the banker or the lawyer.

The dentist does not practice prophylactic, or preventive dentistry in its highest sense for *himself,* and yet he knows that if once a week, or once a fortnight, he could have every tooth *polished* by an expert and the gums massaged by an expert, that nine-tenths of his caries and pyorrhea would never occur.

The importance of the operation as prophylactic surgery—the crying necessity for frequency and skill—and the devastations from a sleepy neglect on the part of the dentist, whose business in life is to care for the mouths and teeth of his patients, stimulated me to suggest the plan for the establishment by the colleges of a class of deft-handed sub-specialists, trained in this one department of dentistry. These ladies to be employed by dentists, or to be supported by the recommendation of dentists, for the regular and frequent polishing and massaging of teeth and the care of the gums. One year's course in the infirmaries of a dental college, with lectures on special histology, physiology and special pathology, would be sufficient, and no attention need be given by them to metallurgy, or to the operative and prosthetic arts and other of the many and complicated trades, so necessary for the practice of general dentistry.

I am deeply and fully in earnest in my belief of the value to colleges, dentists, and the people, of this suggestion. Some of my friends, who agree with the basal proposition, do not agree about the advisability of the scheme.

Dr. D. D. Smith in a private letter expresses his objection in the following language: "It is but an idea, a theory, something that will some time appear to you to be so chimerical that you will wonder how you ever presented it to the profession."

I am confident, however, that the predictions of dental prophets may not be more safely relied upon, during unsettled times, than can the "indications of the weather," by weather prophets.

Dr. L. C. Bryan, of Basel, Switzerland, on the other hand, writes from that city: "I do a lot of this work, but not so thoroughly as I should. I will be the first over here in Europe to put a lady at this; Mlle. Tcheniac will soon be with me to do *this operative work,* so there you have one disciple."

Mlle. Tcheniac is a graduate of the Geneva Dental School, after a four years' course, and of the Ohio College of Dental Surgery, senior course—is thoroughly educated in dentistry, and particularly in the principles of practice and the doctrines of pathology.

As the subject has become an ever-present one with me, and as there seems to be no prospect of avidity on the part of Dental Colleges to open their doors to partial course students and as State laws are so framed that legal objections might prevail, I have felt that perhaps conscience-stricken old practitioners, like myself, may have to turn our thoughts and energies towards this one line of practice, this prophylactic surgery, and as our methods of practice in the past have been faulty, and our methods of estimating the value of the service to the patient have been wrong, I also took the liberty of suggesting the *individualizing of each tooth* operated upon when we scale and polish it, just as we individualize gold fillings.

To-day I saw a gentleman of 40 years of age, who has 31 teeth, and no evidence of past or present caries, but who will surely lose his teeth from loosening, caused by gingival and alveolar disease, unless the trouble is arrested, and a sufficient regeneration of tissue can be induced. The thought came to me: Formerly I might have advised prompt extraction and plates, and I should have charged so much per tooth extracted. The surgical part of such an operation in this case would be exceedingly simple and quite free from risks of any kind. Now, if I give my time to the thorough removal of all extraneous deposits and adhesions and to the skillful polishing of 31 teeth, shall I ask a fee for this service less than I could readily obtain for extracting? Shall I spend more time and skill on the second molar in removing the tartar and polishing it afterwards, and not receive as much as I would for extracting it, or filling it? Our fee-bill must be rearranged now in accordance with the importance of the operation, and the value of our expert knowledge and skill.

When we all do our duty in this direction the field of the dentist will be enormously increased and we shall welcome more and still more laborers of the right kind to come in and help us.

# RECURRENT SEPSIS IN ROOT CANALS.

BY G. S. JUNKERMAN, M. D., D. D. S., CINCINNATI, OHIO.

Professor of Operative Dentistry and Oral Pathology, Cincinnati College of Dental Surgery.

The longevity of pulpless teeth has been a subject of much debate and applied statistics. The debate has led to difference of opinions and the statistics based upon obscure investigations have necessarily resulted in faulty conclusions. Where conconditions vary in different individuals, as they do, we are usually a long ways from a correct prognosis. Doubts as to the usefulness of pulps in teeth of healthy condition have long since given place to assurances that they are the center of life and the nutrient supply to enamel and dentin; and death of the pulp means a like condition to these hard tissues. A pulpless tooth, therefore, has but one tissue that is alive, namely the cementum, which depends upon the pericemental membrane for its vitality. Should the pericementum be destroyed the tooth becomes truly a dead organ and must be eliminated from the animal economy. These are all undisputed facts, a review of the same being entered into here for the purpose of more clearly defining our position in regard to the subject of this paper. A tooth that has lost its pulp becomes a cripple and is a bad subject of risk for the reputation of the dentist, because its vital power of resistance to disease has been diminished just as a one-armed or one-legged man becomes a more hazardous risk to the insurance company, because he is not as well equipped with the weapons of defense and means of locomotion to keep out of harm's way. There is just one result to be struggled for in root work; and that is the healthy preservation of the pericementum. Any method that tends to injure this membrane is faulty. The use of any medicant or method that cannot be so controlled as to preclude the encroachment upon this membrane should be discarded as defective. The indiscriminate pumping of chloro-percha, hot wax, or the jamming of warm gutta-percha into root canals without any previous regard to the surrounding tissue, cannot constitute the act of a thoughtful professional man. This is a case of where we should precede our cart to market instead of following it. The first aim in root work should be to secure the perfect sealing of the apical foramen without obtruding a foreign material of any kind beyond the extreme limit of that foramen. The material that is placed here must also be not only of a non-irritant nature, but should have healing qualities to soothe the torn and lacerated parts that must so often necessarily result from the extirpation of the pulp. It may be asserted that this is too difficult a feat to accomplish. This may be true, but it should be the aim of all to seek after the ideal because even then we fall low enough. In cases of necrosed bone, a removal of part of the disease only aggravates the condition. The surgeon aims to scrape down so as to get a well defined line between the healthy and unhealthy tissue; so in root-canal work we must separate with great accuracy the external healthy tissue from the internal dead root canal. If you go beyond the line, additional diseased tissue is produced. If you retreat from the line, you have a pocket which makes a supply and coaling station for the inimical host. The various root-canal filling materials tolerated by the profession are usually not used but abused. It is of very little moment what we use to fill root canals, if the apical foramen is sealed and with the correct material. In the most perfectly sterilized root canals recurrent sepsis is brought about by disregard of these two principles. I do not contend that these two principles can always be maintained, but in proportion that such is not the case so is the prognosis bad.

Root canals should always be opened thoroughly so that we may see and not only feel the apical foramen. This may be done with a root-reamer without fear of breaking off the drill if you avoid the jamming of it. The material used to seal the apical foramen should have some well defined qualities. It should be germ-proof in itself, slightly antiseptic, and at least non-irritant. Cotton is the only germ-proof material known, as evidenced by the use made of it by the bacteriologists. A former method of filling the apical end of a root with cotton saturated with carbolic acid no doubt owed much of its virtue to this quality possessed by cotton, and I believe to-day that this method is superior to that of pumping chloro-percha into the roots without regard to the apical foramen. A long experience with a mixture that I call the T. I. C. mixture, leads me to believe that it is the ideal filling material to use for sealing the apical foramen. It is composed of cotton, tincture of iodine and tannic acid. A small thread of cotton on the end of a smooth broach is saturated with tincture of iodine; this is then dipped into pulverized tannic acid and it is ready for introduction, which is done in the usual way. The rest of the root can be filled with gutta-percha, cement, or anything else desired. It may be asserted that this is going back to old methods of filling roots with cotton. This statement cannot be substantiated, as the mixture of these three ingredients forms a new substance, which becomes as hard as cement. The iodine and tannic acid have a chemical action upon the cellulose in the cotton, forming a new compound. This can be readily proven by taking a ball of cotton, saturating with iodine and tannic acid, pressing out the surplus liquid and laying in the sun to dry. So if you say that you fill roots with cotton by this method, you only tell part of the story. The cotton acts as a germ-proof, the iodine as an antiseptic, the tannic acid to tan into leather any organic tissue that may not have been removed by the broach. The entire mass forms a new compound, which hardens in a short while, and you have an ideal material under perfect control for filling the apical foramen of a pulpless tooth.

# REGULAR CONTRIBUTIONS

## INTERSTITIAL GINGIVITIS, OR SO-CALLED PYORRHŒA ALVEOLARIS.*

BY EUGENE S. TALBOT, M. D., D. D. S., CHICAGO, ILL.

Interstitial gingivitis is a term applied to inflammation of the gums, alveolar process and peridental membrane. Pyorrhœa alveolaris suggests erroneous etiology, since it implies there must always be a flow of pus and hence the disease must always result from infection with pus microbes, it implies erroneous pathology and treatment for the same reason. This being the case, such a title is so dangerously misleading as to compel in the present stage of dental science its complete disuse. Interstitial gingivitis is always produced in wedging the teeth for filling, in regulation, in extraction, in tooth eruption, in crown and bridge-work when improperly adjusted but there may be no pyorrhœa alveolaris. Only a very small proportion of people have pus infection while everyone over twenty-five years and before that period have interstitial gingivitis.

Interstitial gingivitis is due to both local and constitutional causes. Before discussing the different causes the structures under consideration must be studied.

Because of man's advance in evolution and because of the local degeneracies thereon resultant, through the law of economy of growth whereby one structure is sacrificed for the benefit of the organism as a whole, the face, jaws, teeth, gums, alveolar process and peridental membrane (being variable structures), are predisposed to disease in their very order of evolution.

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*Read before the Odontological Society of Western Pennsylvania, March 9-10, 1903.

The jaws are growing smaller because large ones are not required. The structures are changing shape to adapt themselves to the new environment. Thus—instead of large, broad jaws with low vaults; short, broad alveolar processes with plenty of blood supply and vitality to resist mastication; teeth short, with large bell crowns to give plenty of room between the roots for considerable thickness of the alveolar process for the nourishment of the peridental membrane and support and protection of the gum tissue—small narrow jaws occur with apparently high vaults; long, slender and thin aveolar processes, which are not used in mastication with sufficient force to carry the blood for the nourishment of the tissues. The teeth are changing their shape, causing the roots to come closer together and thus lessening the area of the alveolar process.

Since man has not adjusted himself to his new environment, the face and jaws may be said to be transitory structures. The teeth in some of the lower vertebrates develop continuously. That is, they come into place, possess large foramina, serve their purpose, are shed and new teeth take their place. This is continued throughout the life of the animal, unlike this, man has but two sets. The first teeth erupt, the alveolar process builds itself about the teeth to hold them in place. These are shed, the alveolar process absorbs, the second set appear and the alveolar process builds itself about them to hold them in place. When the second set are lost or from disease the alveolar process is again absorbed.

I have demonstrated this absorption many times upon dogs. Whether it is due to an erupting tooth, the movement of teeth by wedging, correcting irregularities, after extraction or to osteomalacia, it is invariably an inflammatory process. The building up and tearing down of the alveolar process also demonstrates it a transitory structure. This, together with the evolution of the face makes the alveolar process doubly transitory. So sensitive is the alveolar process to inflammation and absorption, the slightest irritation (whether local or constitutional), will set the osteoclasts at work.

The teeth are virtually foreign bodies in the mouth. The tendency is to shed the second set as a result of atavism. The foramina are nearly closed, hence the blood pressure in the pulp is nil. The blood vessels extend through the alveolar process and peridental membrane and stop short. Nourishment ceases, the teeth are like ivory pegs set in the jaws. In the study of the evolution of the pulp, their attachment and the use of the teeth in the scale of evolution must appeal to every scientist that the law of economy of growth resulting in degeneracy is very apparent. The blood vessels and nerve tissues, therefore, at this locality may be called terminal structures. These blood vessels do not run straight through the bone but ramify in all directions forming loops or plexus and are intimately connected with the peridental membrane and gum margin. Now as to the causes of interstitial gingivitis.

The local causes which produce interstitial gingivitis are an accumulation of tartar about the necks of the teeth, decayed teeth producing hypertrophy of the gums, unfinished fillings, gold crowns and bridge-work, artificial dentures, rapid wedging of the teeth, collections of food and everything that will produce irritation of the gum margin setting up a chronic inflammation or gingivitis. This in turn extends to the deeper tissues (the peridental membrane and alveolar process), where it becomes interstitial in character.

The constitutional causes are drug poisoning and auto-intoxication.

The causes which, acting locally, produce direct interstitial gingivitis, are the toxic effects of mercury, lead, brass, uric and other acids, potassium, iodide, and other agencies acting in a similar manner and scurvy. It is not the intention to enter into an elaborate discussion of the toxic action of these drugs, but in a general way to show the similarity in action and results upon the tissues. Scurvy, a disturbance of metabolism, produces the same train of symptoms as metals.

It is a wide-spread opinion among dentists, that in toxic cases, the gums are the first tissues involved. The fact is, however, that when the salts of mercury are taken into the system, as noted elsewhere, they act directly upon the central nervous system; later occur nausea and vomiting, tremor in the arms and hands. Besides local nerve inflammation (neuritis) mercurial and brass poisoning produce paralysis agitans, and lead poisoning, drop wrist.

Excessive secretions of the glands of the body, especially the salivary glands, later occur with rise in temperature, gingivitis with periosteal and peridental membrane swelling, thickening of the gums and loss of the teeth. The central nerve system disturbance affects all other structures. Inflammation of the mucous membrane of the mouth, as well as of the gums and of the alimentary canal, frequently occurs, with sloughing of tissue. The kidneys become involved and are unable to carry off the effete matter. The cachexia, which resembles that of scurvy, is characterized by great debility, anæmia, emaciation, alopecia, atrophy and coarseness of the nails, with pain in the muscles and joints.

Mercury is eliminated by all excretory organs for which it has a great affinity. The soluble salts pass out by the bowels. So long as the excretory organs of the body eliminate mercury, the tissues are not affected. Small doses are eliminated but continuation of dosage soon involves the nervous system and afterwards the tissues of the body, especially the jaws. In my experiments upon dogs, the first effect of mercury is to produce vivacity and animation. This lasts for two or three days, when the limbs begin to tremble. The kidneys and bowels act at first freely. At the end of seven or eight days, paraylsis agitans occurs. There is constant trembling whether awake or asleep; loss of appetite, with slight rise of temperature. At the end of two weeks, the gums become inflamed at the margins. If the drug be continued, death occurs in about three weeks. The loss of flesh is remarkable. Miners working in mercury mines, and mirror-makers, are all affected to a greater or less extent. The nervous system is always involved. The kidneys become diseased. The hair drops out. The miners think it a happy issue from their trouble when they have lost all their teeth, or even the molars. They are henceforth exempt from suffering so far as the teeth are concerned. Many are toothless at thirty-five.

Mercury taken by the mouth is found in the urine in two hours and in the saliva in four hours. It appears in the urine fourteen hours after it has been applied to the skin.* Althought it is believed to have passed entirely out of the system, it has been found in the brain, liver, kidneys and muscles. It is claimed that, like lead, it forms combinations with albuminoids in the tissues for a time remaining inert, to be subsequently oxidized and returned to the circulation as an active poison. While a single dose of mercury may be rapidly eliminated from the system, repeated small doses distributed over a long period are not so eliminated on account of the thickness and occlusion of the walls of the capillaries producing endarteritis obliterans, hence more or less of it is deposited in the tissue. The other drugs and acids act upon the system in a similar manner as mercury .

Auto-intoxication due to faulty metabolism, is the great cause of interstitial gingivitis resulting in pyorrhœa alveolaris, It means self-poisoning. Every disease of the human body produces auto-intoxication. Arrest of development takes place under twenty-six years of age to a greater or less extent. Marked auto-intoxication also occurs as a result of intestinal indigestion. Milder forms of auto-intoxication occur as a result of a want of harmony in bodily functions. The skin on the ends of the fingers will peel when the cold weather appears because the skin, liver, kidneys and bowels do not adjust themselves quickly to prevent accumulation of effete matter in the blood. Soldiers going from a temperate climate to Cuba and the Philippines, with change of food, had auto-intoxication and interstitial gingivitis.

In an examination of the soldiers and officers of two companies who had just returned from the Philippines, located at Fort Sheridan, Illinois, I obtained the following results: The total number examined 127. Americans 98, Irish 12, Germans 9, English 3, Norwegians 1, South American 1, Danish 1, Russians 1, Cuban 1. The ages ranged from 21 to 52. By ages the following data was obtained:

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*Twentieth Century Practice of Medicine, Vol. III, Page 935.

| Age | Disease | Age | Disease |
|---|---|---|---|
| 21 | 8 | 37 | 7 |
| 22 | 5 | 38 | 1 |
| 23 | 17 | 39 | 3 |
| 24 | 12 | 40 | none |
| 25 | 15 | 41 | none |
| 26 | 9 | 42 | 1 |
| 27 | 4 | 43 | 1 |
| 28 | 8 | 44 | 1 |
| 29 | 11 | 45 | none |
| 30 | 5 | 46 | 1 |
| 31 | 4 | 47 | 1 |
| 32 | 7 | 48 | none |
| 33 | 1 | 49 | none |
| 34 | 2 | 50 | 1 |
| 35 | none | 51 | none |
| 36 | 1 | 52 | 1 |

Total, 18 none; marked, 36; medium, 27; slight, 46. Percentage, 14.1 none; 28.3 marked; 21.2 medium; 36.2 slight.

In studying these figures it will be noted the largest number of cases of the disease occurred between the ages of 21 and 30. The period of life at the constructive stage when the disease should not be present. Those over forty were nearly all officers, who took better care of the mouth. It must also be noted these men lived most of the time in the open air. In the American army mostly young men are enlisted. It will be seen the effect of climate and food is very severe. Engineers and laborers in Switzerland suffered from the same cause by going from a temperate to a cold climate when engaged in building railroads on top of the mountains.

Perhaps there is no part of the United States where this disease is so prevalent and demonstrable upon the jaws as in the northwest. The sudden changes of temperature from extreme heat to cold and going from heated houses into the cold atmosphere, and *vice versa*, prevents the adjustment of the excretory organs to an equal temperature, thus resulting in auto-intoxication.

Bodily fatigue will cause gouty and rheumatic pains in the joints and interstitial gingivitis, the result of auto-intoxication. Anæmia is also a cause.

Coming to the more marked causes, the great eliminating organs must be taken into consideration, namely, the bowels, skin, kidneys and lungs.

As auto-intoxication implies self-poisoning, it logically follows, if any excretory organ fails to perform its function, the other excretory organs must do the work of that organ. This is accomplished but very imperfectly. The sweat glands perform this object normally in the summer, but with the first breath of cool weather, the glands contract and the liver and kidneys are forced to perform the work of the skin. Auto-intoxication results. Faulty elimination from the kidneys, without disease of the organs, will cause cardiac palpitation, headache, mental depression, dermatoses, rheumatism, gout, hysteria, epileptiformads and exhaustional psychoses. Asthma, hay fever, adhesion of the lungs from pneumonia, undeveloped lung and chest walls will cause blood impurities and skin eruptions from want of proper oxygenization of the blood. Faulty action of the liver followed by constipation results in sick headache, neurasthenia, drowsiness, skin eruptions, etc.

Dr. J. H. Salisbury* includes under auto-intoxication all diseases and changes in the system by which poisons resulting therefrom are not eliminated.

The more marked forms of auto-intoxication, due to disease of the liver, bowels, kidneys, skin and lungs, are more obviously existant. In health, auto-intoxication is seldom noticed until after the periods of growth are completed. Foods taken into the system are appropriated up to this period. After the tissues have obtained their normal development, although the same quantity of food is taken, as much is not required by the tissues. The waste material is carried into the blood. The amount of food required depends upon waste and repair. This depends to a great extent upon the avocation of the person. The older the person, the more effete matter needs removal. The excretory organs are unable to do the work. The effete matter due to metabolic changes becomes a poison in the blood.

The pathologic material for the study of interstitial gingivitis in man is obtained with such difficulty in the recent state as to necessitate research upon animals. This disease was noticeably present among carnivora, casually inspected in American and European zoological gardens. Cats and dogs were also known to be liable to the disease. As the first step in investigation, two practitioners of comparative medicine, with an extensive hospital practice (Dr. Charles E. Sayre and Dr. Alsop E. Flower), were consulted as to the frequency of this disease in animals. All animals under their care suffered from it more or less, but 80 per cent. of dogs over eight years of age had the disease. Nearly every dog in the hospital under their care was so affected. These dogs comprised all breeds, from spaniels and terriers to the Newfoundland, St. Bernard and Great Dane. On examination, every phase of interstitial gingivitis was found in the mouths of these dogs, from its inception to the loss of the teeth. The number of dogs observed was twenty-seven. The roots of the teeth of some were covered with deposits and so exposed that the teeth could be removed with the fingers. Such diseased mouths are rarely, if ever, present in human beings. The outer plate of bone was absorbed, the roots entirely exposed, pus was oozing from around them and the mucous membrane was badly inflamed. It should be remembered that the jaw of the dog, like the jaw of man, is undergoing considerable variation. Like man, the dog, having put himself under new social conditions (so to speak), is varying greatly both as to brain, skull and jaw from his wolf-like ancestor. As he is under the protection of man, the struggle for existence as to food is less intense than in the wild state, and consequently there is less occasion, even for fighting purposes, of his jaws and teeth.

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*Constitutional Treatment of Interstitial Gingivitis. Journal of the American Medical Association.

Independently of conditions of this type, many of the dogs suffered from constitutional disorders. Eight had skin diseases, which in the dog are more likely to produce obvious constitutional defects than in man. Some were old and blind. Some had been injured and were under treatment for wounds. Some were suffering from rachitis, nervous diseases, and were over-bred. Others were constipated or had germ-types of diarrhœa. One had kidney inflammation and bronchitis with high fever. In short, these dogs, being house dogs, presented most of the constitutional diseases to which man is liable. Animals trained to house cleanliness are more prone to this disease.

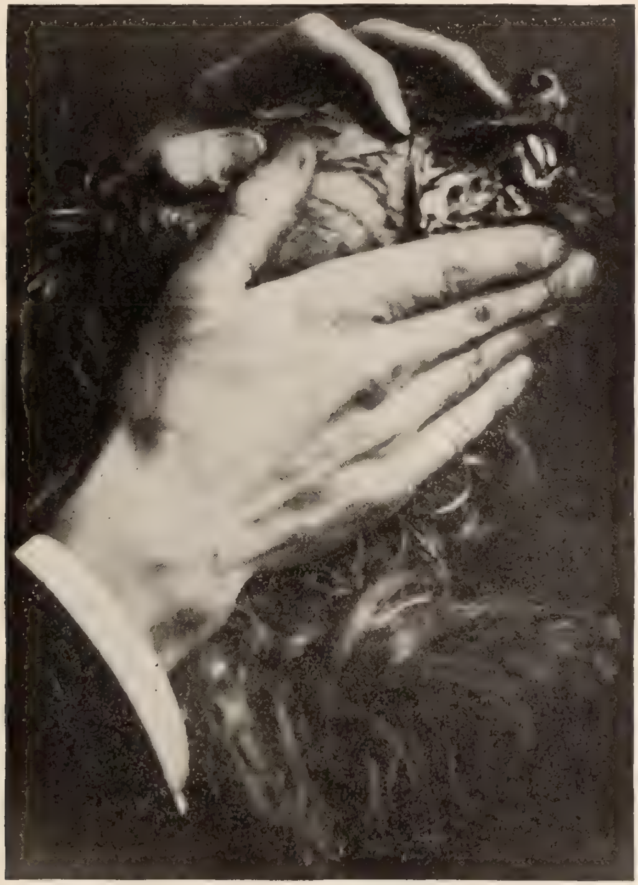

FIG. 1.

The mouth of a Scotch terrier is shown in Fig. 1. The molar and premolar had been removed with the fingers. The cuspids and incisors are quite loose. There are large deposits of tartar. The gum and alveolar process has been absorbed nearly one-half the length of the roots of the teeth. In Fig. 2

is seen the mouth of a Boston terrier with the incisors and premolars removed. There is extreme pyorrhœa. There are calcic deposits upon the cuspids and molars. There is recession of the gums and alveolar process. In Fig. 3 is shown the

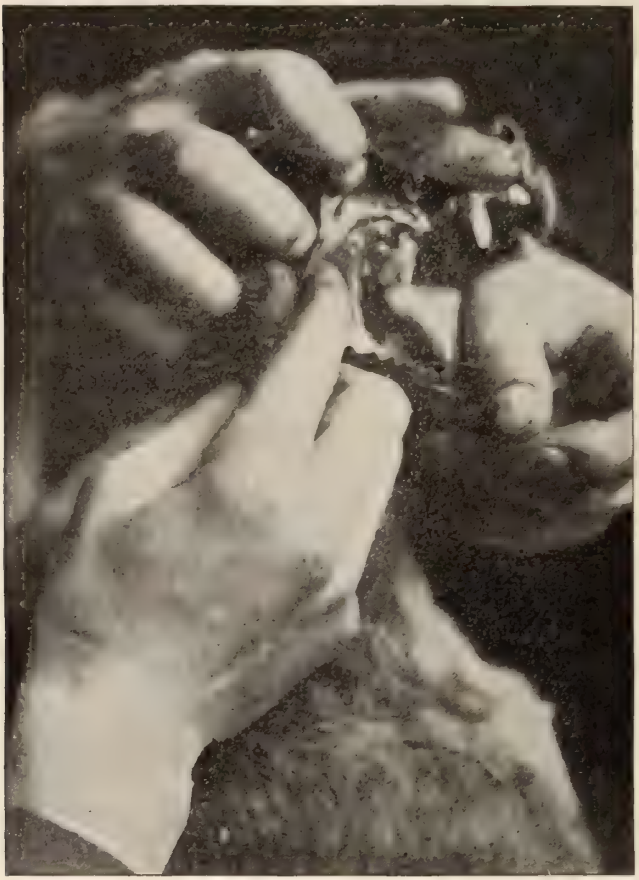

FIG. 2.

mouth of another Boston terrier. In it one premolar in the upper and one on the lower jaw have been extracted. There is extensive inflammation of the gum about the molar, cuspid and incisor, with large calcic deposits about the teeth. In Fig. 4 are shown teeth covered with calcic deposit the entire length of the root. These teeth were removed by the fingers from the mouths of two dogs, one of whom was later obtained for scientific study. This was all the material to be obtained from the hospital, since the dogs were pets that had been placed under treatment by their owners.

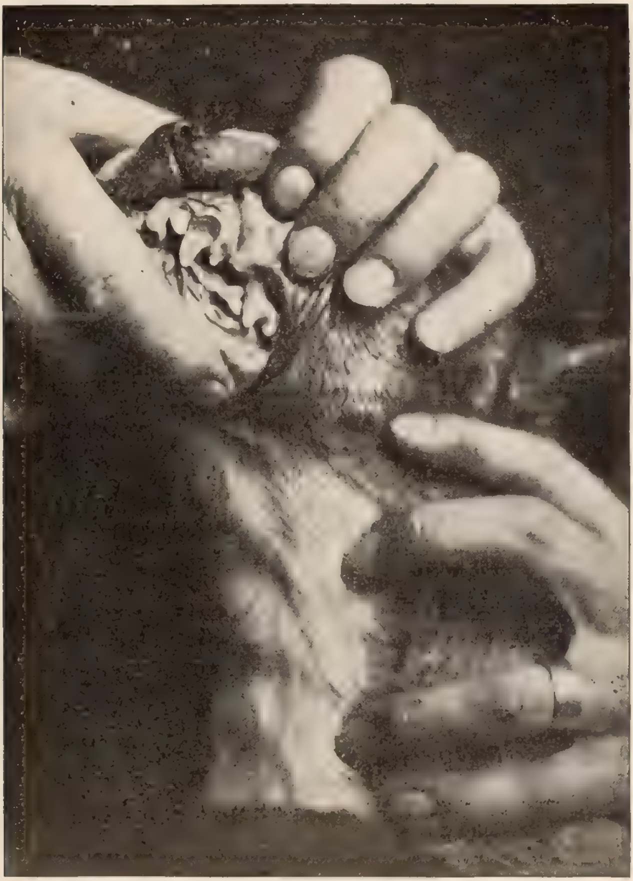

FIG. 3.

Through the courtesy of Poundmaster Hugh Curran, the necessary material was obtained from the Chicago dog pound. Here from four hundred to a thousand dogs are killed per week during June, July and August each year. Ninety-five per cent. are mongrel curs leading a street life; hence neither luxurious diet nor luxurious care can be charged with any disease in them. They have, at least, plenty of outdoor exercise and fresh air. Voiding urine frequently is in their favor. Many, despite this reversion to the life of their wolf-like ancestors, have skin diseases and are deaf and blind from old age. The bodies were secured after death, at which time examinations of the mouths were made. Five per cent. of the dogs entering the pound are of good breeds. These, if not called for by the owners, are sold for a moderate price.

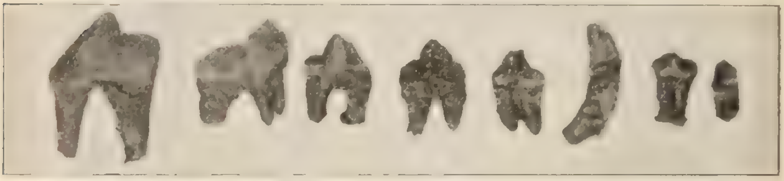

FIG. 4.

The dogs selected for the death penalty are collected in a large box-pen, leading out of which is a door through which they pass into an air-tight box. Communicating with this box is a stove in which sulphur is burned with charcoal. The fumes pass into the box and death is almost instantaneous and painless. After they remain fifteen minutes a door leading into the air is opened and the bodies are carted away. It was at this time that access was had to them. The mouths were then examined. Such cases as were of interest were placed on one side and the jaws removed from the bodies. Inside of one-half hour, the specimens were in a solution to be kept until desired for use. Jaws (with interstitial gingivitis in all stages of progress, from simple inflammation of the gums to the most extreme cases of exfoliation of the teeth), were obtained in an abundance for future studies. It is not an easy matter to ascertain the ages of these animals. In a general way, it was found that inflammation of the gums, especially about the canine teeth, was almost always present in dogs over one year. About 25 per cent. of these dogs at four years of age had the disease; 80 per cent. at from eight to ten years; 95 per cent. over twelve years of age. Since I commenced my investigation (four years ago), I have examined quite a large number of dogs about homes, but have never found a dog over four years without this disease to a greater or less extent. Many house dogs at one year had inflammation of the gums. Dogs for infection and those used for mercurialization were picked up in the streets.

Most of the dogs exhibited at the last three dog shows held in Chicago were young, ranging from one to four years of age. About 25 per cent. would range four years to eight. Three years ago, on a casual examination of the mouths, interstitial gingivitis was found to be common. Occasionally recession of the gums and pyorrhœa alveolaris occurred. During the last two years, on more careful examination, 25 per cent. of dogs between the ages of one and four were found to have interstitial gingivitis, and 75 per cent. of dogs from four to eight years were found to have interstitial gingivitis with recession of the gums and pyorrhœa alveolaris.

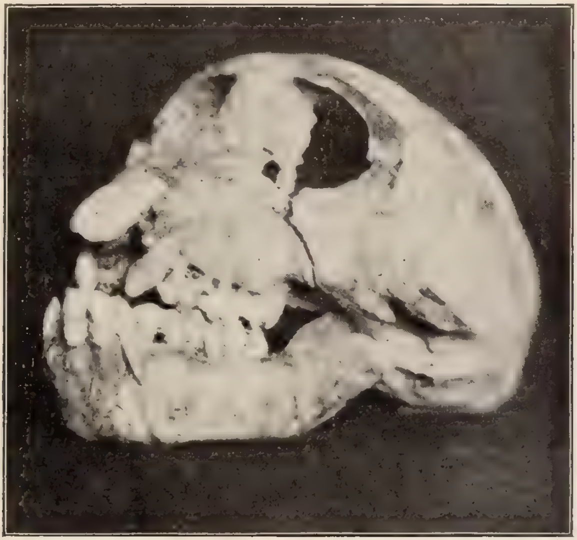

FIG. 5.

In the study of this disease, therefore, dogs are excellent substitutes, since for pathologic research they can be obtained at any stage of the disease.

That other animals suffer from this disease may be noted. Fig. 5 shows the skull of a monkey who died at one year due to tuberculosis. Absorption of the alveolar process, the result of auto-intoxication is most marked. The right superior and inferior central and lateral incisors have dropped out. The other teeth could be removed with the fingers. The cribbing of the horse after the summer outing is the result of uneasiness in the alveolar process from disuse of the teeth producing interstitial gingivitis.*

(To be continued.)

# CASES WHERE THE USE OF OXPARA IS INDICATED.

BY DR. E. F. HAZELL, SPRINGFIELD, ILL.

The caring for and curing of abscessed teeth has been more or less difficult to all practitioners, and will no doubt continue to cause unknown trouble in years to come.

This condition can be presented in two forms, the acute and the chronic. As you all know, when the case is presented in its early or acute stage, it can be more readily handled than when it has been allowed to be putrescent for some months, and has assumed the chronic form.

Our patients say, "Doctor, I thought when a nerve was dead, it could not ache; how is it that this causes so much trouble?" It is this putrescent pulp which is the prolific source of so much annoyance to our patients.

To care for this condition without making it worse than when presented to us, has tested the skill of more than one man. We must open the tooth in question, remove the putrescent pulp, and dress the case, without forcing more of the septic matter through the foramen than has previously passed through.

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*For illustration of the pathology, see Interstitial Gingivitis or So-called Pyorrhea, Talbot.

In all of these cases, where it is at all possible, the rubber dam should be applied before anything else is done. Now wash the cavity with warm water containing some antiseptic solution, then remove all debris from the cavity, being careful not to produce pressure on the contents of the pulp canal. After this step, it has been found good practice to flood the cavity with a solution of hydrogen-peroxide and a one to one thousand solution of bichloride of mercury. Allow it to remain for a few minutes, so that at least a partial sterilization of this putrescent mass can take place. Then with a clean broach the contents of the pulp canal should be removed. This part of the operation must be done very promptly, and with the aid of a liberal quantity of peroxide and bichloride solution. The cavity and canal should now be dried as thoroughly as possible, either with a blast-air or warm-air syringe, or a compressed-air canal-drier. Many prefer the "Evans" dryer, but with this instrument there is danger of forcing some foreign matter through the foramen into the apical space.

The cavity is now ready to be flooded with 95 per cent. carbolic acid or beechwood creosote. This should be allowed to remain for a short time, and then dried out thoroughly.

The Oxpara powder and liquid, which has been previously mixed to a creamy consistency, is now to be used. If it is intended to fill permanently at this sitting, this paste is worked into the canal by means of a smooth broach, and then followed by a gutta-percha canal-point. Should a permanent filling be not indicated, this preparation can be worked into the canal on a small piece of cotton, and allowed to remain for a few days, or as many weeks, when it should be cared for permanently. Some of the worst cases have yielded in from one to three treatments. A little pain is often felt after the insertion of this treatment, but this usually subsides in from twenty to thirty minutes.

Oxpara is a powder and liquid, and is combined when ready for use. It is composed of the following drugs: formaldehyde, thymol, dried or burnt alum, and creosote. Dr. Dodez, the originator of the formula, worked for more than a year before he succeeded in getting the proportions just right, and then he tested this preparation for more than two years before he placed it on the market.

It was with some misgivings that the writer tried this preparation, for so many so-called "sure cure" preparations had been used with questionable results. Thus far, experience has proven Oxpara entirely satisfactory, and it can be used with perfect safety, and always with best results.

# A FEW PRACTICAL SUGGESTIONS.

BY DR. W. D. TICKNER, BLANCHARDVILLE, WIS.

It goes without saying that a perfect plate cannot be made over an imperfect model. To obtain a perfect model a correspondingly perfect impression must be obtained, hence the recognized necessity of special care taken in this operation. How can I obtain such a result? is a question of paramount importance. It is no uncommon thing for a dentist to find upon placing a newly made denture in position in the mouth that it is no good. Another plate must be made. Reasoning from effect back to cause, only one conclusion is tenable, the impression was faulty.

Allowing that it is possible to obtain a correct impression when all the proper conditions have been met, we are forced to conclude that some one or more of these conditions have not been fulfilled.

I wish at this time to mention only one of these conditions which to my mind is of special importance. Allowing that the proper amount of plaster has been put into the cup and inserted into the mouth, the dentist should lose no time in properly adjusting lip, etc., while the plaster will yet *flow readily*. Quickly assuming an easy position, the dentist should remain as motionless as a statue until the plaster has set sufficiently hard so that it will not crumble nor change shape upon being jarred.

If patient and dentist both are *motionless,* other conditions being equally favorable, a satisfactory impression, model and plate will surely result. A slight twitching of the muscles of either dentist or patient, if it occurs at that point of time when the plaster is in that condition so that it is easily moved in cup, but too stiff to flow back to its first position, would often be sufficient to destroy the value of the impression.

These movements may be so slight that when the impression is removed from the mouth, because it *looks* all right, every line and ruga being clear-cut and distinct, it is regarded as all right. Model and plate are made, but alas! time and patience have been wasted. The denture don't and can't fit.

Before making the plate, every model should be proved.

Over the neatly trimmed model, mould a trial plate of soft modeling composition; when thoroughly hard, remove from model, trim margins as you would a finished plate. Place in position in patient's mouth. Carefully exhaust the air. Is the suction *strong* or weak? Is there any suction? If there is any suction, trim and mould until you find the shape of plate that has good, strong suction. How many plates have you virtually made in only a few minutes? If you had trimmed the finished plate, as you sometimes did the trial plate, it would have been entirely ruined.

Perhaps an air or suction chamber is required. You can try it if you wish. If, after exhausting your ingenuity on this trial plate, you fail to obtain the suction desired, a new impression may as well be taken, for a finished plate made over such a model would only be a failure. After the proper suction is obtained, trim occlusal ridge so that every tooth on lower jaw occludes with equal pressure; place in position, and ask patient to chew. If in this process the plate loosens its hold, so would a finished plate. Hunt for the cause till you find and correct it.

Now with your forefinger placed on the ridge corresponding to the position of the incisors, press upward and forward. If the plate drops down at the back, so would a finished plate. Hunt till you find the cause and remove it. Some may be inclined to say, "Oh, too much bother!" Not so much as making one or more extra finished plates. When a satisfactory trial plate has been obtained, remove all tooth marks from the ridge of plate, and, having adjusted plate in patient's mouth, ask him to open and close his jaws tightly time and again, noticing whether the occlusion is every time the same. If so, place the palm of the hand upon patient's chin, ask him to open his mouth wide and then bite backward as far as possible, at the same time emphasizing the request with a slight backward push. Note the result. Upon this trial plate take the bite in the usual way.

After articulating carefully, separate bite from trial plate, which leave upon the model. After removing bite material, close articulator. The teeth-marks on trial plate are an infallible guide as to the way the teeth should occlude. If the bite teeth do not take their place in the tooth-marks in trial plate, then adjust so that they will.

## ARISTOL AND OIL OF CLOVES AS A PERMANENT ROOT-CANAL FILLING.

BY G. R. GARD, D. D. S., ORD, NEB.

Thinking, perhaps, that some of the profession have been having considerable trouble with their root-canal fillings, I endeavor to write this paper explaining my method for filling root canals. Parts of this method have been suggested to me by different dentists, and putting them all together I find that it works very nicely.

Procedure: After having applied the dam I remove all the dead pulp possible, cleanse the canal thoroughly with alcohol, then insert into the canal a silver broach about four inches long, letting the end protrude out of the mouth as far as it will. If there is more than one canal, put a broach into each one, and twist the other ends together, then hold the flame under the ends of the broach until the patient can bear the heat no longer. You will then have the canal both dry and aseptic. Form a paste with oil of cloves and aristol (if the paste is a day or two old it is better), then work it into the canals. Should the canals not be thoroughly dry at the apex, the alcohol will readily take up the moisture, also the oil of cloves, and carry the paste to the ends of the root, which will seal the apical foramen. After the mixture is worked well into the canal, insert a gutta-percha point (in small canals no point is required). This is a very aseptic filling and in a short time the cementum will deposit over the apex and the tooth is saved as far as root-canal filling is concerned.

I filled three teeth, two upper first molars and a second bicuspid for Mrs. S. by this treatment. After one year I had occasion to extract them for inserting full denture, and found them in perfect condition, with hardly any discoloration, which so commonly goes with devitalized teeth.

Abscessed teeth may be filled the first sitting with this preparation, by first washing out the canal with water and peroxide; then pumping in some aqua ammonia to dissolve the fatty substance and saponify it. Wash it with warm water, treat with iodine and creosote, equal parts, then follow the same procedure as above given.

I have used this treatment for one year and a half, and have yet to find the first case that is not a success. I have extracted nerves, filled canals by this procedure, and inserted large gold fillings, without a particle of soreness of the tooth following the operation.

My opinion is that it is the best root dressing and filling ever brought forth. It is worth your while to give it a trial.

# BRASS SCREWS IN DENTISTRY.

BY OLIVER MARTIN, JR., L. D. S., OTTAWA, CAN.

Small brass screws in sizes of ¼, ⅜ and ½ inches in length, with diameters of 1-16, 3-32 and ⅛ inches respectively, will be found useful in several ways. For extracting roots of lower bicuspids and upper laterals, where decay has extended to the process or beyond it, where the elevator could not be used successfully try a screw and you will be surprised at the result. Wash debris out of the root, drill slightly into the sound portion following the canal; put in your screw tightly, then extract by grasping the screw with narrow-beaked root-forceps, giving a straight pull; do not luxate.

Another use for these screws is as retainers for large amalgam fillings in devitalized teeth, or for retaining shell crowns. When used in this way, the screw *must be tinned.* For illustration: Suppose an upper molar is to be crowned and you wish to place a screw in the palatine root, drill into the canal for a short distance, put in your screw; notice the articulation; if the screw is too long, mark it the length you require, remove, and cut off, which will leave your screw without a head. Saw a slot in the end for the driver, then proceed to tin, as follows: Heat the screw in a Bunsen flame, passing it through once or twice, then dip into zinc chloride. Hold in flame, at the same time rubbing over with tin, which will melt and adhere. Be careful not to get it too hot, however, for that will burn off the tin. When it is well covered with tin and while still hot, with a quick movement draw out of flame and throw down on the bench or floor; this shakes off all the surplus tin. You will now find the screw beautifully tinned all over, the thread and the slot for the screw-driver being clean and sharp.

The screw is now ready to place. Put oxyphosphate cement or oxychloride in the the root and screw home. Amalgam can be built around this and it will stick to it.

I might add, first, that tinned brass screws are as safe in the mouth as those of gold or iridio-platinum, and they have this advantage; that the thread is coarse and deep and holds well in tooth substance, besides they are easily procured; second, they have stood the test of years.

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# PRACTICAL POINTS.

### BY J. R. HERZOG, D. D. S., NEW YORK.

A sure method of preventing base rubber from running into the gum-pink, is to take care in packing and flasking to have the vents made only at the back of the flask. Close the flask carefully, when packed, bringing the front part down first, then carefully and slowly bringing the back part of flask together. This causes all surplus rubber to run into the vents at the rear of flask leaving the front portion of pink rubber just where it was first placed in packing.

## TO REMOVE RUBBER FROM BETWEEN NECKS OF TEETH.

Broken burs may be sharpened to a very fine point and can be successfully used to remove all small pieces of rubber that have lodged between the necks of the teeth used in the construction of artificial dentures.

## TO REPLACE BROKEN PLASTER TEETH ON MODEL.

When a plaster tooth or crown is broken from a model the best way to replace it is to drill a hole about one-eighth of an inch in both model and the broken tooth, forming a pin of cement after you have placed cement on both parts and correctly placed them. The cement used for this purpose should be mixed very thin.

# AN AID IN SECURING A GOOD MATRIX FOR INLAYS.

### BY HENRY BARNES, CLEVELAND, O.

To secure a matrix for inlay work, place the platinum foil in the cavity, then take a strip of celluloid film, such as is used in photography, being careful to strip off the silver coating, bring the film around the tooth over the platinum matrix material and hold firmly. Then, through the film, burnish the matrix into the cavity. The film being transparent permits of perfect sight of work and at the same time holds the matrix in place.

## AN INCIDENT IN PRACTICE.

### BY H. W. BOON, D. D. S., CHAMPAIGN, ILL.

I will give a bit of my own experience that may help some one else.

On Friday about 4 o'clock, I extracted several roots in lower jaw. The bleeding stopped at the time but some time during that night it started. The patient awakening about two o'clock, went to a physician who could not stop it and as the fellow had soaked his pillow and shoulder of gown with blood, he was beginning to feel weak from the loss. The physician then telephoned me and I met the patient at the office at once. I tried first; Nitrate silver solution, 40%, per chloride of iron, alum solution, very cold water, giving each plenty of time to have effect, but he was a real bleeder and they would not check the hemorrhage only for an instant. As a last resort, for I did not like to burden him with it, I placed a plaster impression on the bleeding part, adding plenty of salt to harden the plaster quickly, removed the tray, a partial one, then placed a piece of wax on top and had him keep a slight pressure on it. The hemorrhage stopped at once.

I broke the plaster and removed it about 10 hours later and the tissues were healing nicely.

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## AN INTERESTING EXHIBIT.

### BY GEO. W. CLAPP, D. D. S., OTTAWA, O.

During three days in March, the writer had the pleasure of attending one of the most entertaining and instructive exhibitions of dental goods he has ever been privileged to see.

It was called The Dental Manufacturers' Exhibit, held in Horticultural Hall, Philadelphia, Pa., March 17, 18, and 19. It was an exhibit originated and carried out by manufacturers of dental goods, and had no connection with any society meeting or convention.

The first thing that struck one on approaching the place, was the building in which the exhibit was held. One passed almost at a step from between sky-scrapers to the vicinity of the city's most select hotels, and here, as on an equal footing, was the hall, a modern structure two stories high, of very artistic design, and eminently fitted for holding exhibitions.

Passing under Doric arches, by the doorkeeper, and up a broad flight of marble stairs, one came suddenly into the hall. The ears had already been greeted by the hum of many voices and the noise of many people moving to and fro.

The sight on which one came so suddenly was indeed that of a crowd, curious, interested, and busy, with here and there booths lifting their heads above the throng which commenced at the door, and filled every space as far as the eyes could reach.

It struck me at once that more than ordinary expense and attention had been bestowed on decoration. Great palms were scattered here and there, and many of the booths were attractively decorated. In the front of the building an orchestra was playing. The music was seductive enough, and suggested the gay assemblies so common to the building, rather than the busy, business-like crowd before one's eyes.

An admission-card had been required at the door, and now the only barrier was a turnstile through which a stream of well dressed, intelligent looking people was passing. Entering, one was at once lost in the crowd. The interest was contagious, and almost before one was aware he was bending over a table, or listening to explanations, or following the technic of some demonstration.

Every convenience the dentist ever dreamed of was there, ready to his hand. There were instruments for every operation, operative or mechanical; furniture for every office, humble or pretentious; fillings for every cavity; metals and rubbers for every plate; crowns for every root; antiseptics for every wound; teeth for every vacancy; brushes and washes for every mouth; and foods for every invalid.

One could spend not hours only, but days, looking, listening, asking questions, and learning. Everywhere were courteous and smiling demonstrators. The questions you had debated so long within yourself were answered from a new viewpoint. The convenience you had so long desired was brought out and its use demonstrated by the man who invented it, or one skilled in its use.

There were no lectures or papers, but there were thousands of individual conferences. What more natural than that men gathered about a point of common interest should compare notes, discuss methods and cases, and form acquaintances?

For three days the hall was thronged. Megaphone reports from the balcony on the third evening gave the attendance as 6,019. This was at ten o'clock on the third night, and yet the crowd seemed loth to go.

The writer met there men from New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, the District of Columbia, Maryland, Ohio, Indiana, Nebraska, South Carolina, Canada, Paris, Cuba, and one from Guatemala.

In the number of displays made and the extent of each, The Dental Manufacturers' Exhibit must surely stand alone in the history of dental exhibitions.

Such manufacturers as the writer met seemed much pleased with the results of their efforts, and said there would doubtless be other similar exhibitions in other cities. Let us hope there will.

## A BRIEF DISCUSSION OF THE BUSINESS ELEMENT IN OUR PROFESSION.*

BY DR. J. R. BELL, CLEVELAND, OHIO.

The great changes that have been made in the methods, expense and management of both commercial and professional affairs have prompted me to take up this subject.

I shall not talk upon commercial lines except so far as these concern the dentist.

I repeat what you already have heard, that the professional man is, as a rule, a very poor business manager.

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*Read before the Cleveland City Dental Society.

Whether this be true of us or no, remains to be seen. Anyway, let us fortify ourselves against failure as much in business as in professional matters, and in order to do so, we must acquaint ourselves with correct business methods.

It is unbusinesslike to pay or receive money or its equivalent, without receiving or giving a receipt, unless the money is in the form of a check. A check is better than a receipt because it is on record.

Pay for nothing until approved, "never in advance." Always pay bills by check.

Never cash a sight draft or check unless certified to by the bank or the person upon whom it is made payable.

Get in the habit of paying all bills on the first of the month. Preserve a copy of all important letters written, and file away all receipts, letters and important papers.

Ask for a deposit from all strangers, unless recommended by some individual, firm or bank. It is wise and proper for any man to ask for another man's rating from his bank, firm or the individual who recommends him, or even to look him up in Bradstreet or Dun.

Always deposit a check as soon after receiving it as possible, or have it cashed, so as to get it through the clearing house, and thus avoid loss by unexpected failure of the bank or individual upon whom it is drawn or made.

Never do business upon the basis of friendship. This should be an axiom. It is well to repeat the old couplet *before* rather than after making a loan of money or its equivalent, namely:

"Neither borrow nor lend
Nor trust nor contend
And you will gain in the end."

Another ancient and true maxim is:

"I had my money and my friend—
I loaned my money to my friend—
I lost my money and my friend—
If I had my money I would have my friend!"

We all know that time removes the obligation of loan or debt with the *other friend or fellow!*

Polonius knew and was well aware of this when he gave advice to his son Laertes: "Neither a borrower nor a lender be, for loan oft loses both itself and friend, and borrowing dulls the edges of husbandry."

Now I am reminded of a very *important* and *practical matter*, the method of getting money after earning it. This sometimes requires more skill and time than earning it originally. First supply your office with blank checks upon every bank in the city, so as to be ready to accommodate a man who feels for his money, or check, and does not find it, and asks for one, or perhaps says, "I have no check with me! I will send you one!" Which *sometimes* he forgets to do. Supply him with a blank, while his appreciation of what you have done is fresh on his mind! Always make out or have made out a bill with the person's name and address upon it, together with the *number* and *page* of the journal in which the acount is kept. *All* bills should be sent on the first of the month following the completion of the case. Of course in case two or more members of the same family are being served, one would wait until all were through with their work, providing consecutive engagements were made and kept.

Circumstances might affect this rule as it does all others. A bank or business house would not exist long, that did not attend strictly to all collections.

Very few men are reliable or desirable who take offense at bills from the family dentist. (These bills are necessary.)

If bills are not responded to within a reasonable time, it is wise to send a tracer in the form of a polite note. If this does not bring an answer, it is well to go after the case in a more imperative manner. My own experience has been, that it is more profitable in *most* cases to be one's own collector. Of course we *may* resort to the justice court providing our debtor is or is *likely to become* a freeholder or a single man earning a salary. I have never had an answer nor any defense in such cases.

A judgment in readily obtained by presenting to the court your itemized bill or claim, a transcript filed with the court, and your case in cinched. Your debtor is remembered, and when he becomes possessor of his father's or other estate, your transcript is the same as a lien and your bill becomes as good as a government bond, including all costs and interest from the date the bill was originally made. All bills for minors should be charged in your journal "in care" of father, mother or guardian. Without this precaution in the same law's eye, your claim is nil. Of course, I am speaking now of cases where minor children are brought or sent, or those to whom we are recommended. When judgment is taken from a single man, the matter is best left with the attorney. I may be considered unprofessional or even unethical in bringing these matters before you, but, gentlemen, say what you will, there are none of us working *solely* for pleasure; besides, we can operate with much better grace and heart, if we have the wherewithal to live comfortably. One must be able to supply all needs in the way of equipment and material with which to work in our offices. I do not know of a sigle dentist working "for his health," but I do know of many discontinuing work to *regain* it. You may ask ourselves why I have presumed to explain my system or method in this particular direction. Not from any personal vanity, but from a sincere desire to create a discussion of the best ways and means to elevate dentistry. Without a fair income there is rarely an inspiration for the best work, hence this discussion of the way to obtain, and then to retain such income.

I would dissuade any dentist from signing a note or bond for another. There are banks that do this, and no man has a right to sign away his substance, especially if he has a family. There is only one exception to this rule, and that is when ample security is given.

Always keep your possessions well insured, and it is well to keep a burglar insurance upon chattels, especially when the house or office is vacant for any time.

Turning back to the question of remuneration, Prof. Agassiz once upon a time was asked why he did not make money. "Make money," he replied with scorn. "Why, I have no time to make money."

But times and customs have changed, and I am quite sure

Prof. Agassiz's answer would be different if he were living to-day. In fact there are very few Agassiz's walking around.

It is considered now with business men, that in order to succeed to any considerable extent, they must have money, or its equivalent, credit, and the same fact is true with us. If we can buy a dozen gross of burs, 6 ounces of gold, 100 ounces of alloy, gold solder, and other materials, in quantities at large discount, why, we are making money and making it easily. But understand, I am not advocating money-making at the expense of skill or labor, or material, but from the position that a certain amount of money is necessary to conduct a dental practice here in Cleveland successfully, and I do not believe that in comparison with operations here and elsewhere throughout the United States, fees here are what they should be. But when I compare dental operations made in the city of Cleveland I say now, as I always have, that they are as good, and much better, than some of the best I have seen from *some* who stand in high repute in other cities.

I feel certain that small fees here are due altogether to a prevailing custom which lies within ourselves, and not a necessity. That certain men demand, and get, much larger fees than others of equal skill and abaility is also true, and I once heard an operator of high standing say that he was pleased to get Dr. ——'s patients, as they were accustomed to paying good fees.

I want to call your attention to a fact, which you perhaps have not given any thought, and that is that dental fees to-day have not varied in proportion to values in material, equipment and expense generally, and I would be pleased to hear an expression upon this phase of our subject.

There is a prevailing feeling among a certain class of patrons, that estimates are given on dental operations. In my practice and in my opinion *exact estimates should not be given.*

Character of patients, operations, and so forth, preclude a possibility of estimating fees in advance. This feature should be discouraged, as it is unprofessional. Shoppers, fakirs and agents should be dealt with politely yet firmly. I consider it good practice to exact a fee for examinations and consultations. Our time is our capital, and it should be so understood. In my opinion it is our duty to give honest judgment on operations, but not upon the operator himself.

It is unsafe to condemn a man, but it is just to inform a patron if the work upon his teeth, or those of his child, is defective. Much good has come to me through a violation of this law. I have been told that so-and-so said I was a high-priced man, but a *fair operator,* and it is human nature to covet fair things, even at high prices. In fact, it is a good advertisement to be called a high-priced operator. We all want good goods from reliable sources and it is true that the man who makes a virtue of necessity, and minds his own business, is sure to succeed.

It is not how much we can do, but how well we can do it, that is considered by most people.

I deem and consider it our duty, when a case comes under our care, to polish all rough fillings, the same as if they were our own; that is, if they can be! Polish all sharp edges of teeth, and trim down all fillings or teeth that are being injured by opposing teeth, but I believe most emphatically that we should be remunerated for the time so expended.

I believe a dentist should charge the same as a physician for professional calls, and extra for operations made while making such professional visits. A dentist, in my judgment, should be fortified with knowledge and skill, material medicaments and instruments, to conquer anything he undertakes; then charge accordingly for such services! If we are courageous enough to operate, then let us have the moral courage to demand a fee.

This is much more than I ever expected to say upon this phase of the subject, but, as we are classed as specialists of medicine and surgery, why not take all the advantages belonging to such a specialty, and discourage the question or the impression that we are working at a trade for day wages, like the barber, shoemaker, machinist, carpenter, or ordinary mechanic.

As a safeguard against suit for damages and malpractice, so-called, it is wise and proper to have the homestead in the wife's name. So many such suits have been brought against physicians in past years, that it has become the universal custom to have the title to the home in the wife's name, or to own property only as a trustee. In fact, most surgeons do not pretend to possess anything in fee simple, the liability of suit has become so frequent.

# CURRENT ARTICLES

[Condensed for THE DENTAL SUMMARY readers.]

## SOME POINTS IN DENTAL PRACTICE.

### BY H. G. LOGAN, D. D. S., AURORA, ILL.

A useful bicuspid crown less conspicuous than the all-gold shell or the porcelain faced bicuspid crown may be made in cases where the root when trimmed down presents an unbroken horizontal surface as follows: Make a Richmond cap consisting of post or posts, band and top soldered by not less than 20k. solder. Place finished cap on root, select and grind to occlusion a suitable plain bicuspid tooth and stick to place with hard wax. Remove cap and tooth in this position and trim away superfluous wax. Cut a pattern from paper or tin-foil for a band which will surround the tooth and unite with the cap. Cut band low buccally but high enough lingually to inclose lingual cusps. Unite this band with 20k. solder; remove wax from cap, place band in position, invest and unite to cap with 18k. solder, flushing it out buccally. Try on the root, remove, set the tooth in cup with cement, afterward set finished crown.

This crown was described some little time ago in the *Dental Cosmos* and was termed the J. Y. Crawford crown. I have used it with a great degree of satisfaction.

Some advantages claimed for this crown are—less conspicuous than the shell, easier to repair than where facing is soldered, access to a larger number in selection of a suitable tooth form and no firing of the porcelain.

Use of the matrix in compound amalgam fillings—some of us *do* use amalgam.

It hardly seems possible that any one would attempt to put in a mesio or disto-occlusal amalgam filling without using a matrix of some sort, and yet I cannot account for some work on any other theory. I have recently seen some in which more amalgam was packed into the interproximal space between the teeth than was used in the filling. As for the kind of matrix to be employed that depends, as Sam Weller would say, upon the taste and fancy of the operator. The main requirements are that the material should be thin and capable of being fitted and held to the gingival border. Thin steel sheets, nickel or tin strips cut for each case seem to answer the purpose and possess advantages over fixed matrices in some particulars, as they can be bent or cut to suit and are more easily detached with less danger to the filling.

Do you use Oxpara in the treatment of putrescent pulps? Since using this remedy I have had less trouble than formerly with those cases of incipient pericementitis where the patient applied with a "sore tooth," and which sometimes run to an alveolar abscess despite the use of all the standard remedies, such as the essential oils, etc. The manufacturer also makes claim to its usefulness as a canal filling. Of this I have had no experience.

A useful instrument, easily formed and sharpened, may be made from worn-out burs of various shapes and sizes by use of emery or finer lathe stones, flatten the two or four sides, as case may be, forming a drill, not pointed, but shaped more nearly to a chisel edge. Finish the sharpening on a fine Arkansas or other stone. The best kind of a drill of this class is made from an old cross-cut fissure bur, ground on the two opposite sides only, leaving the natural serrations on the edges.—*Extract Review.*

# SWAGING ALUMINUM PLATES.

BY P. P. DORR, D. D. S., FORT DODGE, IOWA.

This short paper is for those who perhaps, like myself, have encountered little difficulties in the ordinary process of swaging aluminum plates, especially where there are deep undercuts, where the rugæ are prominent, the condyles large, and where the cuspid eminences and fossæ are marked. To obtain an accurate mold in cases like this with the ordinary sand ring is impossible.

The Palmer sand ring is used, which is separable and with which a very accurate mold can be made. A zinc die is cast, with which the first part of the swaging is done and the plate trimmed to the proper outline. Then another mold is made, into which fusible metal is poured, making a small die, one which a Parker swaging device will readily admit. After swaging the plate well on to this, it will be found that in cases like the above, to remove the plate from the fusible metal die without bending it is next to impossible, due to its having been swaged well into the depressions. At this point the etching for the attachment of the rubber is done. The die and plate together are then placed into a thin copper ladle and submitted to heat until the die melts, when the plate can be removed. There is no danger of the aluminum fusing with the metal of the die.

The plate may now be tried in the mouth, or if it is desired to do so before the etching is done, the die may be melted as before stated, and after trying in the mouth the plate is built around with moldine and again filled with fusible metal, after which the etching may be done without the risk of warping or enlarging the plate. After using a fusible metal die, the plate should not be sprung back upon the original plaster cast.

In using the Parker swaging device some do the final swaging on the plaster model, but the danger of fracture with the consequent distortion of the plate, together with the fact that the etching may be done while the plate is in contact with a metal die, has led to the adoption of this method.—*Brief.*

# A CAUTION AGAINST USING THIN WALLS IN LONG FILLINGS.

### BY G. WALLER STAPLES, D. D. S., DALLAS, TEXAS.

It is not my effort to put to you any new ideas, but to impress upon you the importance of the observance and most careful consideration of some points that, though they may not be very interesting, nevertheless, are all significant, in that upon them the success of all our filling depends.

The secret of duration of fillings lies principally in two points: Strong and smooth margins, and in making the filling short enough. Have your margins heavy always. Under no consideration do I advocate saving tooth structure. Of course, it is a sin to waste it; but if your margins are not heavy enough to pack your filling solidly against, it is only a matter of time until they give away. I say it is best to cut it away at once, and make a solid, strong filling, that will last.

The next point is, make your fillings short. Always make them short. And what is more, keep them short. There is no greater annoyance to the profession than the complaint of a person coming into your office with a tooth broken, a filling out or loose, a tooth sore to the extent that it can not be used to advantage, or else probably abscessed. There is nothing more aggravating than for said party to air his views as to his dissatisfaction, imperfection or failure of a piece of your work. Especially in the presence of some one upon whom you are striving to make a good and lasting impression. Make your filling short.—*Texas Dental Journal.*

# REPLACING FACING—QUICK METHOD.

### BY H. E. EATON, D. D. S., TORONTO, CANADA.

In the backing from which the facing has been broken, drill pin-holes to correspond with pins in facing to be put on. Grind facing to fit. Carbon paper may be used to mark points of contact that need grinding down. With Dr. E. A. Bryant's bridge-repair outfit, which is composed of a countersink, dies for threading pins, and a combined carrier and driver, used to adjust the nuts, gold nuts are supplied to exactly fit the enlargement made by the countersink. These instruments are made for the right-angle, in order that any part of the mouth may be reached. Having fitted the facing, countersink the pinholes on the palatine or lingual surface with the instrument made for that purpose. Turn a thread on the pins in the facing, dry off the backing, and mix a little cement, as for setting a crown; apply it to the backing; place the facing in position, and with the carrier adjust the nuts to the protruding ends of the threaded pins. Screw up as tightly as they will bear, grind off and polish the ends of the nuts, remove the surplus cement, and the work is completed.

Two further suggestions might be offered in connection with the operation.

(1) In place of the combined carrier and driver, which comes with the outfit, a worn-out right-angle may be used and will be found more convenient in certain cases. A bur with a screw-driver formed on the point to fit the nut, is securely fastened into the right-angle. Make a German silver sleeve or ferrule to slip loosely over the bur for the purpose of receiving and holding the nut. Split one end, making four fingers, which will have spring enough to hold the nut securely, while placing it, but which will easily withdraw from it when well started on the facing pin. With a tube made of German silver extend the mandrel to half an inch beyond the right-angle sleeve. On the end of this place a ball or button for the convenience of turning it with the fingers.

It will now be readily seen that with the nut placed within the ferrule, which in turn is adjusted on the driver and carried to the threaded facing pin, that it is a very simple operation, with a few turns of the button to send the nut into place.

(2) Occasionally a case presents where the pins are so close together that there is not room for the two nuts side by side. In such a case put one nut on and grind it down even with the backing before placing the second one.—*Dominion.*

# EDITORIAL

## SYSTEMIC POISONING.

As a study of the development of poisons within the human body proceeds, we are impressed more and more with the necessity of keeping the great organs of elimination in their most active condition.

This is particularly needful for those following sedentary occupations and applies directly to the average dentist.

Food materials in process of digestion and putrefaction are frequently changed into active poisons while undergoing remoleculization within the system. By action of bacterial life complex substances, such, for instance, as muscle, etc., are broken up into less complex molecules, and so the process of chemical division goes on until the well-known products, carbonic acid gas, ammonia, and water, results. The variety of combinations, however, into which an individual atom of carbon may enter during this long series of changes is almost unlimited, and in each change in combination there is more or less change in nature. In one combination the atom of carbon may exist as a constituent of a highly poisonous substance, while the next combination into which it enters may be wholly inert. Ptomaines, therefore, may be designated as transition products in the process of putrefaction.

Ptomaines, however, are not the only poisons formed by micro-organisms. Black gives five kinds of microbic poisons: "First the *enzymes* of some of the micro-organisms that act injuriously; second, the *ptomaines* formed by bacteria growing in dead animal matter; third, *leucomaines*, or alkaloidal poisons formed by micro-organisms growing as parasites in living matter; fourth, *toxins*, a set of poisons, formed by micro-organisms, also nitrogenous and very similar to the alkaloidal poisons, but which do not form salts with acids, and are therefore not true alkaloids; fifth, *tox-albumins*, or albuminoid poisons, which seem to be confined to the albuminous contents of micro-organisms and become active only after the death and solution of the bodies of these plants."

*La Science*, in speaking of these poisonous ptomaines, etc., says: "A false doctrine long in favor during the greater part of the last century, attributed to plants alone the power of producing the alkaloids, those nitrogenized poisons which often have fatal effects on the organism even in slight traces.

"It has been demonstrated that in the course of the putrefaction of the tissues small quantities of alkaloids are formed. The cadaveric poisons or ptomaines are basic bodies having sometimes the odor of the putrefaction, sometimes the soft perfume of flowers; they are of the nature of venoms and produce on the organism an action as prompt and violent as the poison of the cobra. . .

"Their origin is the putrefaction of albuminoid bodies.

"Carrying these researches still further, M. Gauthier has studied the formation of ptomaines in the excreta of living animals. Every one knows the disordered state produced in the living being by the accumulation of matter that should be eliminated. In urine, in the muscles, etc., poisons were isolated. Injected into the veins, these toxic agents have a special action on the nerve centers, producing sleepiness and fatigue—the symptoms observed at the end of a period of high living.

"A tired man is simply poisoned, and when these poisons have been eliminated the muscles become supple again. The custom observed by butchers, never to kill a tired animal, is a consequence of the same facts. The discovery of ptomaines and leucomaines has thrown new light on the working of the organism; whenever the organs are in pain and work badly, these poisons are forming, and by their localization in the tissues, give rise to fatigue, cramps and fever."

Then there are the waste products of denutrition that, while a physiological process, may act similarly as poisons to the system if there be faulty metabolism in the organism. For instance, where the elimination of urea is interfered with, the accumulated poisons cause depression of the nervous system, and if elimination be not re-established, paroxysms of apparent insanity, or rigors, and death may follow.

It is essential, therefore, that the dentist pay attention to keeping his system in the best possible condition. Be careful what he eats, how he eats, and particularly how much he eats, for it is better to eat too little than too much. Drink enough water to keep the kidneys thoroughly flushed; keep the skin in a healthy condition by frequent bathing; take plenty of exercise, judiciously selected; ventilate the office and the home so that you have an ample supply of good air to breathe; and lastly, do not neglect to get an abundance of tired nature's sweet restorer, balmy sleep.

## OUR NEW DEPARTURE.

In this issue we have instituted a new department and have chosen Dr. George Edwin Hunt to conduct it, as his conduct is always good, and he is thoroughly competent to take the conductorship, having, it is said, once been a conductor (on a dinky car). So it may be expected that he will railroad the material through with a dispatch characteristic of other representatives of Indiana.

We have ycleped it ? ? ? ? ?, not that it is at all questionable (the department, not the conductor), but G. E. (Good Edwin) being a broad-minded man, we do not want to limit his capabilities by giving the department a specific name, for in his notice to correspondents he says: "Correspondence is solicited from those seeking light in obscure places on abstruse questions."

The department will appear whenever the conductor has copy ready. He says: "I write only when the spirit moves me," but this does not signify that he will write seven days a week, for it seems that all spirits do not have the same effect.

The reader may, however, depend upon seeing the department whenever copy is sent in, and a close friend of the conductor promises to see that he is kept supplied with questions and other things necessary to prevent a lassitude of his cerebro-cerebration.

It may not be out of place to sound a note of warning here, for the editor and publishers will not be held responsible for what appears in this new department, and the conductor states that he is not himself responsible for what he says.

We, therefore, warn all serious, think-it-is-a-sin-to-laugh readers to refrain from perusing this new departure; and, in fact, warn all readers except those with lax risibles, for we cannot stand responsible for the after-effects.

We venture to say, however, that few, if any, will skip it.

# SUGGESTIONS

## GUTTA-PERCHA CEMENT.

**Emil Herbst.**

In order to obtain in a single preparation the combined properties of gutta-percha and cement, Dr. Herbst has devised the following method: A given quantity of cement powder is mixed thoroughly with an equal amount of base-plate gutta-percha filings, and into the resulting mixture a small amount of cement liquid is incorporated. This paste becomes thoroughly hard and can be advantageously used in setting crowns and bridges. It becomes soft and malleable when heated, and therefore a bridge set with it can be easily removed.

Incidentally he refers to another method of obtaining a gutta-percha-cement compound, which consists in mixing together equal quantities of cement paste and gutta-percha solution. This combination makes a preparation which easily adheres to the walls of the tooth and becomes slightly soft upon being heated.—*Zahnartztliche Woch—Cosmos.*

## A NEW DISINFECTANT.

Dr. D. W. Barker, Brooklyn, recommends in *Items of Interest*, bromo-chloron (hypobromo-chlorite of lime) as a disinfectant of great value in root-canal treatment, abscesses, and wherever a good disinfectant is needed in the mouth. It is soluble in all proportions in water, and like all hypo-salts is very unstable, even a slight trace of acid, either organic or inorganic, combining with the lime, liberates nascent chlorin and bromin. It does not attack tooth substance and it is non-irritating to the soft tissues. The author has had great success in root treatment with it, for when it comes in contact with putrescent material both nascent bromin and chlorin are liberated to act on the bacteria and their products.

## STARTING GOLD IN SMALL CAVITIES.

**C. E. Woodbury.**

When a cavity is too small to use an assistant plugger, and the gold rolls and does not stay in place while starting the filling, it can be tightened into cavity in the following manner: The cavity should be filled one quarter full and the gold condensed, allowing it to roll if it will. Then take a clean, dull inverted cone bur that will fill the cavity as nearly as possible, and by using high speed and a little pressure the gold can be spread until it fills the bottom of the cavity perfectly and is firm in place. The idea being to spread the gold, and not cut it, a dull bur must be used. If the bur is clean there will be no trouble in making more gold cohere to what is already in the cavity. The method applies principally to small, round cavities usually found on the occlusal surfaces of upper molars, and lingual cavities in the anterior teeth.—*Review.*

## REPLACING A FACING.

**E. S. Wingren.**

Grind the facing to fit the backing without removing the bridge or crown from the mouth. Drill holes in the backing to admit the pins, making them as nearly as possible opposite to, and of the same diameter as the pins. After the facing has been ground to fit accurately it can be cemented in place and the pins riveted with a plate-punch. A piece of wood, properly shaped, should be used on the labial or buccal surface of the facing to protect it, and with the flat jaw of the punch placed against the wood the pins of the facing can be securely riveted with the pin point.—*Review.*

## BROACHES BROKEN BEYOND APICES.

**J. E. Wilkinson.**

Accidents happen in the best regulated dental offices, and at the hands of the best operators. One occasional mishap is the breaking of a nerve-broach with end protruding beyond apex. If trouble and soreness follow, and the operator is sure of the character of the condition from measurement or X-ray examination, a remedy is looked for. The writer had experience with two cases. In the first extraction and replantation were resorted to. Result: Absorption of the root, and loss after two years. In the second case the canal was filled, an opening was made through the soft tissues, then with a round bur the process was penetrated, and the bur run rapidly upon and over the apex. This was done on May 19th, 1901, and resulted in relief from pain and recovery. The case had an interesting history. An interval of a year and a half had intervened between the time of the accident and the treatment described, during which there was constant soreness and occasional keen painfulness.—*Extract Dominion Journal.*

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## PREPARATION OF ROOTS.

**H. J. Goslee.**

In the preparation of roots for the application of dowel crowns with a band the procedure incident to the easy and accurate adaptation of the band may be greatly facilitated by allowing a projecting end of the root of about one sixteenth of an inch to remain until the peripheral trimming, the taking of the measurement and the fitting of the band have been accomplished. Such a precaution not only facilitates the removal of enamel, and the taking of an accurate measurement, but the projecting end of the root serves to properly shape the band before it comes in contact with the soft tissues, and to guide it to place in fitting, thus assuring accuracy in the adaptation, and relief to the patient from the discomfiture usually attending this portion of the procedure. When the band has been thus fitted both it and the root may then be cut down to the proper point, and the cap completed in the ordinary manner.—*Review.*

## METHOD OF PREPARING FACINGS FOR POSTERIOR BRIDGES.

**J. S. Bridges.**

I have here a method of preparing facings that perhaps some of you have seen. I prefer a facing for a bicuspid that is a little longer than we usually select, and I cut on the occlusal surface a step or flat seat, and into this seat and along the back of the facing I burnish 120 foil, and then on the foil I place a piece of ordinary backing. After I have swaged up a cusp of about 30 gauge gold it is all waxed together and invested as I have here. This method of backing takes the strain away from the pins and allows the gold to be of great strength at the weakest point, producing a finished tooth that shows no gold at all.—*Review.*

## DENTAL LAC FOR INLAY IMPRESSIONS.

**P. St. C. Smith.**

Substitute Ash's dental lac for gutta-percha, and you will have a quicker, more rigid and perfect impression. Warm a piece of the dental lac, a little larger than cavity, press to place, cool with a jet of water and remove. Try it.—*Review.*

## METHOD OF TAKING A BITE.

**E. J. Rohrer.**

Form base plates and wax rim as usual and place a bead of soft wax, about the size of a bean, on the occlusal surface of the wax rim on both sides, and about the position of the second molars. Having these beads of wax very soft, place the plates in position in the mouth and request the patient to close the jaws. If there is a tendency to displacement of the plates they can be held with the fingers. The beads of wax will first come in contact with the upper plate, and the resistance will cause the muscles to bring the lower jaw into its proper relation to the upper before the wax rim touches elsewhere. This may be termed a "psycho-physiological" method of obtaining a correct bite, as it produces the natural mental and physical stimulus. The patient should never be requested to *bite,* as the word is frequently interpreted to mean the most forward position of the jaw.—*Review.*

## CROWNING BROKEN-DOWN TEETH

**C. W. Siefkin.**

As I have had many patients with badly broken-down teeth, which other dentists have condemned to the forceps, perhaps a brief description of my method will help some one who has not tried it. I cut the crown off to or below the gum line, treat and fill the canals and fit a band to the neck of the tooth. Then take one, two, or three (as case may require) small, flat-headed wood screws, which can be procured at any hardware store; if not, jewellers generally keep them. Use these as posts. Fill with amalgam. Next day remove the band, trim, and crown. —*Brief.*

## AMYLOFORM AS AN ANTISEPTIC.

Amyloform has for some time been used on the Continent in therapeutics to replace iodoform. It is a derivative of formic aldehyde, and appears in the form of a light and very fine white powder which is insoluble, and may be heated to 180 degrees C. without decomposition, thus lending itself to complete sterilization before use. The antiseptic effects produced are extremely pronounced. Pus from osteo-myelitis placed upon gelatin gave cultures of staphylo and strepto-cocci; amyloform, when mixed with the pus, arrested all bacterial development. Similar phenomena were observed when a culture of staphylococci containing amyloform was injected into animals, no untoward result ensuing. Amyloform is non-toxic and without odor. It is recommended in the treatment of fresh and suppurating wounds; it quickens granulation, the wound soon presenting a healthy appearance. —*Phar. Journal.*

## TO CLEAN RUBBER DAM CLAMPS.

**F. W. Stephan.**

To clean rubber dam clamps, place a number of them in the palm of the hand, add a little powdered pumice, moisten with water and work together for a few minutes; then rinse in clear water and you will find that all the little crevices so hard to get at will be polished.—*Review.*

## TO REMOVE THE ODOR OF IODOFORM FROM THE HANDS.

The odor of iodoform may be removed from the hands by washing with a weak solution of tannic acid, by rubbing freely with chloroform, by bathing them in vinegar, or by ablutions in flaxseed-meal water.—*Journal of Med.*

## TO PREVENT GAGGING AND RETCHING FROM INSERTION OF ARTIFICIAL PLATES.

**H. S. Mann.**

In a practice of forty years I have had many patients who vomited so easily that it was impossible for them to wear a plate.

One woman fainted away when the impression was taken, later carrying the plate home in her pocket. I advised her to daily practise rubbing the roof of the mouth with the finger. This she did and in a few weeks could wear her plate in comfort.

Shortly after this an old gentleman came to me for a set of teeth. He already had several sets in his pocket, all of them cut in shape of horseshoes by the dentists who had made them, for the purpose of getting around that gagging spot; but to no purpose, for this patient would gag if the roof of his mouth was touched in *any* spot. I did not attempt to take his impression, but sent him home with the same advice I had given the woman. In a few weeks he returned and I made him a set which he is still wearing.

I have heard of many remedies and have tried some, but found them of no value. Until your patient can bear the finger on the roof of the mouth, there is no use of his trying to wear a plate; this he can do after a few weeks of constant massage, as above directed.

Cocaine is dangerous and ultimately of no use.

The use of liquor is supposed to deaden the sensitiveness of the palate, and is advised by many dentists. If it does no other good, it will bring the doctor a new job about once a year,—say, just after the annual birthday celebration.—*Office and Laboratory.*

## TO REMOVE PLASTER FROM FLASKS AFTER VULCANIZING.

To easily remove the plaster from flasks after vulcanizing, paint the inside of the flask, says Dr. A. W. Buckland, with a thick solution of whiting, before plaster is poured in. This prevents corroding and the plaster easily comes away.—*Dental Hints.*

## THYMOL FOR CHRONIC ALVEOLAR ABSCESS.

**W. H. Hersh.**

Thymol for the treatment of chronic alveolar abscess has done for me what no other single remedy has been capable of doing. To get the best results use a saturated solution of thymol crystals in alcohol, always having some of the crystals undissolved in the bottom of the bottle. Cleanse the root canal, paying little or no attention to the fistulous tract. Insert a dressing of cotton saturated with the thymol solution and seal the cavity tight with gutta-percha. Leave four or five days and repeat if necessary.—*Review.*

## TO DETERMINE THE EXACT AMOUNT OF RUBBER FOR A PLATE.

**Eugene Halcombe.**

Have the sheets of base-plate material and of rubber the same size and thickness; for instance, take S. S. White Pink Parafin and wax and Bowspring Rubber (thin sheets) and trim wax down to the size of rubber sheet. Then after finishing the waxing up, take remaining piece of wax and placing it at one end of sheet of rubber, cut off at the latter a similar piece, and the remaining piece is exactly the amount for the plate.—*Dental Hints.*

## TO PREVENT FRACTURE OF RUBBER PLATE.

To prevent the fracture of a rubber plate in the median line where gum teeth are used, after investment and after the flask has been opened and the wax washed out, take a fine platinum or gold wire and form a loop around the pins nearest the joint in the two blocks, twist the ends of the wire together, pack the rubber in and vulcanize. The plate will not crack at that point, neither will the joint open.—*Hints.*

## METHOD OF RESTORING THE CORNER OF A TOOTH.

**L. F. Jack.**

First cut the surface smooth with a diamond disk, then excavate a cavity without an undercut. Burnish into this a platinum matrix, and after filling this smooth over with porcelain and bake it. Select a plate tooth the proper shape and color, and cut off as much of the corner of that as is needed to restore the original shape of the tooth; after fitting this to the tooth, wax it and the baked porcelain together, marking the edges of the porcelain so as to be able to place it back in proper shape. Then slightly hollow out both the baked piece of porcelain and the corner of the porcelain tooth, place in some lower-fusing body than that first used, and fuse the two pieces together. Then cement this in the tooth, holding it in position with a sand-paper strip until the cement hardens.—*Cosmos.*

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## REINFORCING PARTIAL DENTURES.

**E. W. Bridgeman.**

Draw with a pencil an outline of the piece to be made, then score the model directly on the pencil mark with a shallow groove. Make a zinc die from the model and swage 18-k No. 30 gauge B. & S. so as to slightly overlap the grooved portion —or, in other words, make this base-plate a little larger than the outline on the cast. To reinforce this thin plate, use half-round clasp wire No. 15 gauge, roughly adapted to the model with clasp benders; tack it with solder, and swage. Proceed as above with other wires, following out the line of the first one so that they will lie cloesly one to another, tacking each one as the work proceeds and swaging the whole when the wires are in place. The plate will now have a ribbed appearance, which, if skillfully carried out and the wires brought into close contact with each other, will have a very pleasing appearance. The piece can now be invested and fully soldered; either flushed with solder so as to finish smoothly, or the wires merely soldered to the plate, leaving the ribbed appearance, which, in the finished piece, will look very artistic, if properly finished.

In small pieces for removable bridges the work may be done entirely on the plaster cast—preferably one hardened with stearin. In this case thinner plate of a higher karat should be used, so that it may be burnished to position. The wire or wires can be bent to place correctly if care is taken.

Partial lower dentures supplying the bicuspids and molars demand a connecting bar back of the anterior teeth. This, when made of rubber, as it usually is, is either bulky or weak, but a light, strong bar, giving less annoyance to the patient, may be made by the above method with very little additional expense, which expense will be fully compensated for by the bar's beautiful appearance.—*Cosmos.*

## A METHOD TO AVOID THE CHIPPING OF PORCELAIN TEETH IN SOLDERING.

**O. E. Wall.**

Having had a great deal of trouble with plate teeth chipping at the incisal and approximal edges from borax in soldering, I have been experimenting in the hope of overcoming this, and I find the following plan to be most effectual.

After the teeth are ground and backed I coat the porcelain facings with a rather thick coat of ordinary sperm oil, and then wax up. When the case is properly waxed, recoat the facings freely with oil and invest. When the wax is removed apply oil to the investment where borax is likely to penetrate, then heat up and solder in the usual manner. In all instances I use a camel's hair brush with which to put the oil on.

By following the procedure here indicated I find my failures lessened fully ninety per cent.—*Cosmos.*

## A NAPKIN POINT.

**G. E. Hunt.**

There is one point that perhaps some of the younger men have not had demonstrated to them, insignificant, perhaps, but useful. If it is desired to keep dry a left lower tooth for ten, fifteen, or twenty minutes, act as follows:

Fold or roll a napkin into a strip one and a half inches wide and not less than seven or eight inches long. Have the patient raise the tip of the tongue to the roof of the mouth. Place the end of the napkin against the lingual surfaces of the right lower teeth and pass it across the mouth under the tongue to the lingual surfaces of the left lower teeth. Let the tip of the tongue be depressed. Pass the remainder of the napkin back across the mouth from left to right, this time over the tongue. Stand to the right and in front of your patient. Place a cotton roll between the cheek and left upper teeth to occlude the parotid duct. Hold the tongue firmly down against the floor of the mouth with the fingers of the left hand, the thumb being under the chin. The lower fold of napkin occludes the submaxillary and sublingual ducts and the upper fold enables the operator to hold the tongue down without it slipping. The whole secret of success lies in keeping the tongue firmly down against the floor of the mouth. The patient may at first make unconscious spasmodic efforts to raise the tongue to swallow, but if it is held to place these efforts will cease.

For keeping dry the right lower teeth, reverse the operation.—*Brief*.

## A SUGGESTION IN ROOT FILLING.

**W. C. Hayes.**

I find that in treating root-canals a very good method in filling them is to saturate the canal with chloroform, taking a gutta-percha point and placing it in the root. The chloroform will dissolve the point, and I believe in this way I can fill the apex of the root more perfectly than with chloro-percha. I do not believe that it is possible to introduce chloro-percha well into the apex of the root without at times having air-bubbles there, which you do not get if the chloroform is placed in the canal first. I have followed this method in a great many cases and I believe it gives a more perfect filling than the chloro-percha.—*Cosmos*.

## BINDING WIRE FOR RETAINING THE RUBBER DAM.

**R. G. Beale.**

I would like to call attention to the value of binding-wire, such as is used for measuring roots, for retaining the rubber dam, instead of the ligature. When the cavity extends beyond the gum margin, it is frequently difficult, as well as painful for the patient, to force the ligature as far up as is necessary, but with the wire this is overcome. The dam adjusted, the wire is put around the tooth and screwed tight. The rubber may not clear the cavity, but with the plier-points or plugger the wire can be forced up; as it is flexible, it conforms to the tooth and holds the rubber firmly in position.—*Extract Brief.*

## METHOD OF STERILIZING THE HANDS.

**R. T. Morris.**

The best method for preparation of the hands that I have employed is the one that has been so well described by Dr. Robert F. Weir. It consists in sterilizing the hands by means of nascent chlorine gas. The surgeon takes in one hand a heaping teaspoonful of commercial chloride of lime and an equal quantity of powdered carbonite of sodium. If water is then poured into the hand, the two powders make a paste in which a reaction rapidly sets free chlorine gas, and, if this mixture is thoroughly rubbed over the hands for two or three minutes, we get a very complete sterilization of the skin without much injury to the epithelium.

## EXTRACTING BADLY DECAYED ROOTS.

**F. G. Crouch.**

The case was a very badly broken lateral incisor in the mouth of a hospital patient. If I had crushed the process I would have left a deformity, so I anesthetized the gum, took a long fissure bur and passed it well around the root, removing any process, then took a small forceps and removed the remaining root without any trouble whatever. I have had success in a number of cases by using this method. This mode can be used anywhere in the mouth, especially when you want to preserve the alveolar process.—*Brief.*

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CONDUCTED BY GEORGE EDWIN HUNT.

[This department will be devoted to the rational consideration of weighty problems propounded by the members of the profession. It is hoped that much valuable information will be imparted that cannot be found elsewhere. Correspondence is solicited from those seeking light in obscure places on abstruse questions. The inclosure of a stamp or two is suggested, if a reply is expected, not necessarily for publication, but merely as a guarantee of good faith.—G. E. H.]

R. Edrawer asks.—1. What charge should be made for portions of fillings swallowed by patients? 2. Would you try to get them back? I mean the fillings. How?

*Answer.*—1. The only charge possible is petty larceny. Charging the patient with soda-water has been tried but has proven inefficient as it is now generally admitted that gold is insoluble in soda-water. 2. By all means. The wet process is indicated owing to the physical surroundings. Dissolve the gold in hydrochloric acid, converting it into the chloride of gold. Precipitate it with the proto-sulphate of iron, add a pinch of salt and a lump of garlic about as big as a piece of chalk—white chalk. Simmer for fifteen minutes in a chafing dish and serve hot. This method is not permissable in the case of a Chicago man, as the chloride of gold in the system will interfere with the drink habit.

K. A. Gerbier asks.—1. I have heard many dentists speak of using whiskey as an anesthetic. Should I take it or give it to the patient? 2. About how much would you take?

*Answer.*—1. It is an excellent obtundent but can hardly be classed as an anesthetic except when taken in large amounts, a barrel or so. If the sufferings of the patient are painful to you, proceed as follows: Take of ice, 150 grammes; whiskey, 60 cubic centimeters; carbonated hair-oil, 125 cubic centimeters. With eyes crossed, throw the hair-oil over your left shoulder, fix the ice firmly over the anterior fontanelle with a four-tail bandage, and insert the whiskey in your stomach by any convenient means, the main point being great haste. Relief should follow shortly. If it does not, repeat the dose every thirty seconds as long as the pain is in evidence. 2. It is impossible to answer this question accurately. So much depends on the size and disposition of the barkeeper. And whether he is looking or not.

B. L. Awstit asks.—State the hygienic effect of percussion caps on exposed pulps, after administering trinitrin as a heart stimulant.

*Answer.*—The use of percussion-caps for capping exposed pulps has been largely abandoned since the unfortunate accident in Toledo. On the thirty-first of June, 1901, a prominent Toledo dentist capped a pulp and filled the occlusal surface of a superior first molar with gutta-percha. That afternoon, in the heat of debate, the patient made a derogatory statement regarding the ancestral relations of a large man. Shortly after, the cusp of the inferior molar was forcibly jammed into the gutta-percha, exploding the percussion-cap with sufficient force to drive the first molar partly through the frontal bone, where the three roots stick out in a very annoying manner. They interfere with brushing the hair and otherwise confuse the patient. When he has the headache he is in doubt whether to call on a physician or a dentist. Since then the practice has been practically abandoned.

Dr. Foo Lish Buoy asks.—Will you please tell me if it is better to wear a molar with or without a filling for watch-charm or stick-pin?

*Answer.*—These questions of social observances are, of course, a little out of the trend of thought of this column, but we are willing to tackle most anything that presents itself. We gather from what Miss Ruth Ashmore says on this subject in a recent number of the *Ladies' Home Journal*, that a number of our best people have recently ceased to wear watch-charms and stick-pins of molars. Bicuspids are all the rage now. It is perfectly proper to have a moderate-sized filling in the tooth as it gives an air of elegance to the affair that is appreciated by all of the *haut ton.* We would not recommend a mesio-occluso-distal filling, however. It might be considered ostentatious and vulgar. In our most exclusive social sets, the jaw-bone sunburst is becoming quite popular. An inferior maxilla with sixteen teeth is secured, and diamonds set in the occlusal surfaces and cutting edges. The maxilla is then nicely gilded and the sunburst worn with the hair *en coiffure,* if you know what that is.

DR. WAN TONO asks.—I would like to know how to keep my instruments from rusting. My drawers are lined with felt.

*Answer.*—Instruments never rust while in use. Why don't you get a practice? If your drawers are felt, take them off.

CONSTANT READER asks.—Do you know anything better than spit to keep my hand-piece from squeaking?

*Answer.*—Marshall's Operative Dentistry, page 636, states that spit leads them all. It is cheap and handy and it does the business. If you are a bit shy yourself, borrow from your patient.

# NEW PUBLICATIONS

Dental Materia Medica, Therapeutics and Prescription Writing. By Eli H. Long, M. D., Professor of Dental Materia Medica and Therapeutics in the Dental Department, University of Buffalo; Professor of Materia Medica and Therapeutics in the Medical Department, University of Buffalo. Philadelphia: Lea Brothers & Co., Pub., 1903.

There is great need of a modern text book on this important branch, for the use of dental students and this the author has endeavored to supply. He says that his conception of the book that is needed to-day is, one that will serve three purposes, viz.: first, to treat fully all remedies that belong properly to the special field of dental medicine; second, to discuss briefly the action and application of the most important general remedies, emphasizing those whose action may avail in dental diseases and emergencies, and third, to furnish matter for reference that will cover all ordinary demands of the dental student and practitioner as to general remedies, their preparations, doses and uses. In this the author has apparently succeeded. The book is divided into four parts.

Part I.—Treats of drugs and medicines, their constituents and preparations; remedies, their classification and definitions; administration of medicines.

Part II.—Local remedies such as depletives, counter-irritants, escharotics, demulcents and emollients, astringents and hemostatics, detergents, antacids and alkalies, antiseptics, bleaching agents, anesthetics and local analgesics.

Part III.—General remedies, anesthetics, stimulants and tonics, alteratives, sedatives, eliminatives.

Part IV.—Prescription writing, poisons, tables of poisons and antidotes, etc.

As a whole the matter is very well prepared, but the arrangement of the material, while all right so far as classification is concerned, makes the complete study of individual drugs a little confusing. For instance, nitrate of silver is treated under escharotics, in one place, in another under astringents and hemostatics, in another under antiseptics. Peroxide of hydrogen under astringents and hemostatics, antiseptics, bleaching agents, etc. In no one place do you find all about the drug and unless one is careful to read from all the places where it is classified he will get an incomplete idea of that drug or conclude that the author's treatment of it has been faulty.

The material in the book is well compiled and while in some instances not as complete and exact as to the dental uses of drugs as it might be, the book as a whole is a very worthy presentation and merits the attention of the profession and teachers.

PRINCIPLES AND PRACTICE OF FILLING TEETH. By C. N. Johnson, M. A., L. D. S., D. D. S., Professor of Operative Dentistry in the Chicago College of Dental Surgery. Second edition revised and enlarged. Philadelphia: The S. S. White Dental Mfg. Co., Pub., 1902.

While covering about the same ground as the first edition, this second edition has undergone a thorough revision and contains the best and latest thoughts on this important subject. The author states that in revising he found that almost every page required some alteration and that several chapters had to be practically rewritten. And regarding this he says: "This is only in accordance with the rapid evolution of thought upon this important subject, and it is a healthy sign of the progress of the profession when an author finds his work, however conscientiously written, so soon out of date."

The sale of the first edition exceeded the expectations of the author and publishers for the profession recognized in it material of inestimable worth.

It is a concise treatise upon the principles of every-day practice and no dentist can afford to ignore the instruction it affords. That portion of the work devoted to the preparation of cavities is alone worth many times the cost of the book.

The text is written in so lucid a style no one can fail to comprehend fully everything described, although many illustrations are used throughout the text. Once in your possession it becomes a veda mecum and is a safe guide to follow.

## PAMPHLETS RECEIVED.

Ethnographic Odontology: the Inca Peruvians, by A. H. Thompson, D. D. S., Topeka, Kan.

Mouth Infection Due to Natural Teeth, by D. D. Smith, M. D., Philadelphia.

Oral Sepsis, Necrobiosis, Odonto-Antisepsis and Prophylaxis, by William A. Mills, D. D. S., Baltimore, Md.

Transactions of the New York Institute of Stomatology for 1901.

# SOCIETY

## WISCONSIN STATE DENTAL SOCIETY.

The thirty-third annual meeting of the Wisconsin State Dental Society will be held at West Superior, Wisconsin, July 21, 22 and 23, 1903. The usual railroad rates will be obtained. The profession is cordially invited to be present.

T. M. Welch, *President.*
W. H. Mueller, *Secretary,*
Madison, Wis.

## NATIONAL DENTAL ASSOCIATION.

The National Dental Association meets at Asheville, N. C., July 28-31, 1903. Preparations are being made for one of the best meetings in the history of the Association. The Section officers are preparing a program which from a scientific and practical standpoint will be difficult to excel. The clinics will be made a special feature. All dentists interested in the advancement of the profession should attend this meeting. All state and local societies should elect delegates who will be sure to attend the meeting. Each society is entitled to one delegate for every six of its members. The usual railroad rates will be had on all roads in the United States and part of Canada—one fare and a third, on the certificate plan.

L. G. Noel, *President.*
A. H. Peck, *Rec. Secy.,* Chicago.

## NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The National Association of Dental Faculties will convene in the ballroom of the Battery Park Hotel, Asheville, N. C., Friday, July 24, 11 a. m. The Executive Committee is called to meet at same place 2:30 p. m., Thursday, July 23. Parties having business with this committee are hereby notified to be on hand at this time.

H. B. Tileston, *Chairman.*
S. W. Foster, *Secy. Ex. Com.*

## OHIO STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of the State of Ohio will meet at the Hartman Hotel, Columbus, June 30-July 2, for the purpose of examining candidates for certificates of registration. All applications should be filed with the Secretary by June 20. For further particulars address

H. C. Brown, *Secy.*, 112 E. Broad St., Columbus, O.

## INDIANA STATE DENTAL ASSOCIATION.

The forty-fifty annual meeting of the Indiana State Dental Association will be held at Indianapolis, June 30, July 1, and 2, 1903. A splendid program is being arranged by the executive committee, and a most cordial welcome will be extended to those who attend.

F. R. McClanahan, *Secy.*

## MAINE DENTAL SOCIETY.

The thirty-eighth annual meeting of the Maine Dental Society will be held at Kineo, Moosehead Lake, July 21; 22 and 23, 1903.

This is an ideal opportunity to visit this beautiful spot, the most attractive summer resort in the State.

All dentists are cordially invited to meet with us, and we especially extend an invitation to those dentists who are natives of Maine to participate in a pleasant and profitable reunion. We are to have papers and clinics by men of national reputation, including Dr. L. P. Haskell, of Chicago, Dr. W. A. Capon, of Philadelphia, and Dr. R. Ottolengui, of New York.

The Mount Kineo House accommodates five hundred guests and grants us half rates on this occasion.

Reduced railroad rates from Portland.

Dr. C. H. Haines, Dexter, Me.
*Chairman Executive Committee.*

## VERMONT BOARD OF DENTAL EXAMINERS.

The Vermont Board of Dental Examiners hereby give notice that they will meet at the Pavilion Hotel, Montpelier, on Tuesday, July 14, 1903, at 2 o'clock p. m., for the examination of candidates to practice dentistry.

Application blanks, together with rules and instructions to candidates, can be had by applying to the Secretary.

Application, with the fee, ten dollars, must be filed on or before July 5, 1903.

Geo. F. Cheney, *Secy.*, St. Johnsbury, Vt.

## COMMENCEMENTS.

Dental College, Ohio Medical University, Columbus, O., April 16; graduates, 62.

Omaha Dental College, April 30; graduates, 32.

Western Dental College, Kansas City, Mo., April 29; graduates, 60.

Western University of Pennsylvania, Dental Department, May 1; graduates, 57.

Washington University, Dental Department, St. Louis, April 30; graduates, 30.

Central College of Dentistry, Indianapolis, May 1; graduates, 4.

Northwestern University Dental School, Chicago, May 1; graduates, 175.

University of Buffalo, Dental Department, May 5; graduates, 75.

University of Maryland, Dental Department, April 29; graduates, 64.

New Orleans College of Dentistry, May 4; graduates, 15.

Indiana Dental College, May 2; graduates, 65.

Pennsylvania College of Dental Surgery, May 2; graduates, 81.

Atlanta Dental College, April 30; graduates, 46.

Cincinnati College of Dental Surgery, May 5; graduates, 15.

Ohio College of Dental Surgery, Cincinnati, May 7; graduates, 81.

Kansas City Dental College, May 4; graduates, 28.

Dental Department, Baltimore Medical College, May 1; graduates, 23.

Baltimore College of Dental Surgery, April 30; graduates, 57.

## MICHIGAN STATE DENTAL SOCIETY.

Remember the 47th annual meeting of the Michigan Dental Association will be held in Petoskey, Mich., July 7-8-9, 1903.

Dentists bring your wives and spend your vacation.

F. H. Essig, *Secretary.*

# AFTERMATH

## PERSONAL AND MISCELLANY.

Dr. Dittmar, Chicago, has opened a dental office at Galena, Ill.

New Offices:—Drs. J. F. Spring and N. W. Morgan, Pontiac, Mich., have opened offices in Farmington, Mich.

Dental Conundrum:—Why is a dentist like an artist? *Answer*—Because he draws from real life.—*L. W. J.*

The Parting That Gives Pain:—"This parting gives me pain," sighed the man as the dentist separated him from a tooth.

Bankrupt:—Edward P. Fuller, Milwaukee, on April 20, filed a voluntary petition in bankruptcy. Liabilities $899, and assets $788, in bills receivable.

Massachusetts State Dental Board Examination:—Out of 84 candidates who took the examination in March, only 49 were successful in passing.

A Dentist Obtains Political Position:—Dr. J. Brister, a dentist at Zion City, is the first colored man elected to office there. He is one of the new aldermen.

Loss by Fire:—Dr. G. C. Sharp, Marshall, Mo., loss $100. Dr. Z. V. Raney, Logan, O., loss $500. Dr. T. T. Carter, Macksville, Kan., office and contents destroyed.

Dental Board Appointments:—Dr. J. M. Meyer, Tacoma, Washington, appointed by Governor McBride; Dr. M. I. Hults, Hutchinson, Kan., appointed by Governor Bailey.

Columbus, O., Dental Society:—Officers elected are: President, Dr. H. M. Seamans; vice-president, Dr. Ed. C. Sherman; secretary, Dr. Harry Cooper, and treasurer, Dr. E. M. Fisher.

Why Women's Teeth Decay:—A philosopher declares that the reason why women's teeth decay sooner than men's is because of the friction of the tongue and the sweetness of the lips.

ROBBED:—Dr. F. T. Gabeka, New York City, was robbed of gold in various forms, worth $150, by thieves entering his dental office. Dr. S. Hoblit, Lincoln, Ill., $35 worth of gold and scrap taken.

FORMED PARTNERSHIP:—Dr. R. J. Allison, Nashua, Ia., has entered partnership with Dr. Stooksbury, Iowa Falls, Ia. Dr. L. G. Watkins entered partnership with Dr. E. L. Avery, at Howell, Mich.

RACINE DENTAL ASSOCIATION:—The dentists of Racine, Wis., have organized a society. Officers are: President, F. B. Washburn; vice-president, F. L. Clifford; secretary, M. L. Fancher; treasurer, L. E. Hall.

BANKRUPT:—On the application of Frederick C. Brush of New York, Vice-Chancellor Emery has appointed ex-Judge Henry M. Nevins receiver of the Mason Detachable Tooth Company, doing business at Red Bank, N. J.

COMMITTED SUICIDE:—Dr. Edwin M. Stealey, a well-known dentist, took strychnine in his office, in San Francisco, then telephoned to his wife and calmly awaited death. Despite the efforts of three physicians he died a few hours later.

CAPITOL CITY DENTAL ASSOCIATION, organized at Lansing, Mich., April 7, 1903, and the following officers were elected: President, George W. Coleman; vice-president, A. N. Lawrason; secretary, Ralph Morse; treasurer, William T. Shaw.

DENTIST PLEADS GUILTY:—Joseph C. Feeley of Minneapolis pleaded guilty to the charge of practicing dentistry without a license. He was sentenced to pay a fine of $25 or to spend thirty days in the workhouse, and he decided to pay the fine.

COMPLIMENTARY:—THE DENTAL SUMMARY has a new and attractive cover nearly every month. The enterprise of its editor and publishers is very commendable.—*Western Dental Journal.* Thanks, Brother Patterson, we are trying to keep "things movin'" in this section.

MINNESOTA DENTAL BOARD:—The board of Dental Examiners held its annual meeting April 25, and election of officers. Dr. F. E. Moody of Minneapolis was re-elected president and Dr. C. H. Robinson secretary and treasurer. Of twenty-five applicants eleven were granted licenses.

CHICAGO DENTAL SOCIETY:—Officers elected are: Don M. Gallie, president; W. H. Taggart, first vice-president; W. G. Dittmar, second vice-president; Winthrop Girling, recording secretary; A. E. Morey, corresponding secretary; C. P. Pruyn, treasurer, and J. H. Woolley, librarian.

WOMEN DENTISTS' BANQUET:—The annual banquet of the Alpha Upsilon Pi Sorority, the only existing fraternity of women dentists, took place April 11 in a down-town restaurant, San Francisco, Cal. The fraternity, which was organized in 1896, is composed of female dentists of the Pacific Coast.

EARLY CLOSING ON SATURDAY:—The dentists of Niagara Falls, N. Y., have agreed to close their offices from May until October at noon on

Saturdays, and take a half-holiday. Freeport, Ill., dentists have also decided to close at noon on Saturdays. Dentists in other cities and towns would do well to follow suit.

THE KISS:—A kiss is a peculiar proposition. Of no use to one, yet absolute bliss to two. The small boy gets it for nothing, the young man has to steal it, and the old man has to buy it. The baby's right, the lover's privilege, the hypocrite's mask. To a young girl, faith; to a married woman, hope, and to an old maid, charity.

PRESIDENT THORPE:—Dr. Burton Lee Thorpe of St. Louis and Dr. S. C. A. Rubey of Clinton were elected president and secretary of the Missouri State Board of Dental Examiners at the semiannual meeting. Dr. H. J. Vaughan of Kansas City was elected a delegate to the National Association of Dental Examiners. Seven applicants took the examination before the board, and of these three passed.

GUADALAJARA, JALISCO, DENTIST DEAD:—Dr. B. Thurber, a Canadian dentist of Guadalajara, Jalisco, is dead. He had resided a long time at Guadalajara and was highly esteemed in social and medical circles. Apparently he had no relatives, so his belongings were taken by the authorities and deposited in a safe place until such time as anybody entitled to possession of the same may appear. Thurber had made a fortune in Guadalajara.

MEMORIAL WINDOW FOR HORACE WELLS:—The placing of an artistic and symbolic window in the Center Church, Hartford, Conn., by Charles T. Wells, in memory of his father, Dr. Horace Wells, the discoverer of anesthesia, and of his wife, Elizabeth Wales Wells, was made the occasion of an impressive service at the vespers April 12. The city dental and medical societies attended in a body and many dentists from surrounding towns were present.

NEW OFFICERS OF CONNECTICUT STATE DENTAL ASSOCIATION:—President, Dr. George O. McLean, Hartford; vice-president, Dr. David W. Johnston, New Haven; secretary, Dr. Frederick Hindsley, Bridgeport; treasurer, Dr. Edward B. Griffith, Bridgeport; executive committee, Dr. Henry McManus, Hartford, Dr. W. H. Metcalf, New Haven, Dr. C. F. Gibbs, Bridgeport; librarian, Dr. R. H. Keeler, New London; editor, Dr. A. H. Spicer, Pawcatuck.

IS INSTRUMENT STERILIZATION NEGLECTED?—The fact that the sterilization of instruments has not become general among dentists is, I think, pretty clearly shown by the fact that the most important dental societies in the State, and in the country, when holding conventions and giving clinics, fail to provide means for even the ordinary cleansing of instruments, and leave the clinicians to depend on such antiseptics as they may have at hand.—*S. A. Hopkins, in International.*

DIED:—Dr. V. D. Gibson, Erie, Pa., aged 55. Dr. R. C. Morris, Olney, Ill., aged 63. Dr. H. P. Shaw, Malden, Mass. Dr. Geo. McKirgan, Passaic, N. J., April 9, from supposed overdose of morphine. Dr.

M. Sanborn, Kingston, N. H. Dr. T. A. Lyon, Camp Point, Ill, aged 72. Dr. G. H. Crary, Red Wing, Minn. Dr. A. H. Whitmer, El Paso, Tex., committed suicide. Dr. A. T. Wineman, Phoenix, Ariz. Dr. John Mahoney, Richmond, Va., aged 79. Dr. L. F. Keating, Troy, N. Y., aged 35. Dr. A. B. Bauer, Milwaukee, aged 30.

PHYSICIANS AND DENTISTS IN MEXICO are not required to pass an examination in order to practice in Mexico. The only thing that they cannot do without undergoing an examination in the Spanish language is to sign a death certificate. Very few of the foreign physicians practicing in this city have taken the examination of the country, and when it is necessary for them to have a death certificate signed they simply call in a native physician. Dentists are subjected to no regulation whatever in Mexico beyond the payment of their license fees.—*Modern Mexico.*

SUIT AGAINST DENTISTS:—After an exciting trial a jury at Cumberland, Md., awarded Mrs. Isabel Whitehurst $150 damages against a firm of dentists. Mrs. Whitehurst sued for $3,000 damages. Mrs. Whitehurst had gold crowns put on her teeth by one of the dentists, for which she was to pay in installments. The work proved unsatisfactory and she made complaint to the firm. She testified that she was invited to occupy the chair by one of the dentists, who, without warning, pulled out the teeth in question, saying he was taking back the gold that was not paid for.

MARRIED:—Dr. S. C. Bryan, Syracuse, N. Y., to Miss Cynthia Sinclair, April 9. Dr. S. T. Adamson, Malvern, Ia., to Miss Carrie Heckel of Albion, Neb. Dr. F. O. Hanson, Racine, Wis., to Miss Anna Nelson. H. W. C. Bodecker (son of C. F. W. Bodecker), Berlin, Germany, to Miss Anna F. Jurianz, Berlin. Dr. A. F. Lewis, St. Louis, to Miss Anna Blank, Las Vegas, N. M. U. B. Shantz, Kewanna, Ind., to Miss Mabel Bormer. Dr. J. T. Pyles, Frederick, Md., to Miss Charlotte Bowers. Dr. E. L. Jones, Mokelumne Hill, Cal., to Miss Lillie Peck. Dr. A. P. Cote, Woonsocket, R. I., to Miss Antonia Farley. Dr. W. E. Bullard, of Streator, Ill., to Miss Gertrude Clendenin.

THE EDITOR'S HEAVEN:—An editor who died of starvation was being escorted to heaven by an angel who had been sent out for that purpose. "May I look at the other place before we ascend to eternal happiness?" "Easily," said the angel. So they went below and skirmished around, taking in the sights. The angel lost sight of the editor and went around hades to hunt him up. He was found sitting by a furnace, fanning himself and gazing with rapture on a lot of people in the fire. There was a sign on the furnace which said: "Delinquent Subscribers." "Come," said the angel, "we must be going." "You go on," said the editor, "I'm not going. This is heaven enough for me."

DR. SYLVESTER HONORED:—The title of court counselor, which Emperor William has just conferred upon Dr. Sylvester, his American dentist, at Berlin, is noteworthy as being the first distinction of this kind conferred by an European monarch upon a citizen of the United

States. The title carries with it no pay, but a number of prerogatives and likewise official precedence, among the former being the right to wear a gold embroidered uniform, and likewise membership of the court circle. Physicians have had this rank conferred upon them ere now, but this is the first time that it has been granted to any dentist, native or foreign, and Dr. Sylvester is certainly the first American citizen to be appointed a "hofrath," or court counselor.

ANOTHER X-RAY DIAGNOSIS MISTAKE:—Charles Wilgus, aged 60, of West Mansfield, Ohio, had two sets of false teeth. Last night Mr. Wilgus went to bed with both sets in his mouth, as was his custom. This morning when he awoke, the lower set was gone. He suffered a strange choking sensation in his throat, and thought he could feel the teeth lodged there. A physician was summoned hurriedly, and he advised that the man come to this city for an X-ray examination. Mr. Wilgus was driven to the City Hospital here, where an examination was made. Physicians thought they could detect something in his throat, and an incision was made but no teeth were found there. Mr. Wilgus is in a precarious condition as a result of the operation. After the operation the missing teeth were found in the woodbox at Wilgus' home.

A "FORTY-NINER" DENTIST WITH OUTDOOR OFFICE, BIG PRICES AND NUGGETS FOR FILLING:—A smooth boulder for a chair, high towering walls of impregnable granite for walls and the blue sky for a roof were the unique conditions surrounding what was probably the first dental office in California. The dentist was Dr. S. M. Harris, then known as "Little Doc," to-day mayor of Grass Valley, Nevada County. This odd dental office was founded in the day when men rocked cradles with more cherished burdens than new born babies; when caravans of people flocked into California in search of gold; when the founders of this great state took up their habitation in a wild and desolate country. When you arrived at Dr. Harris' office there was a noticeable absence of the plush-covered chair and other accouterments which usually mark the dentist's office. There was no drill run by foot-power, no bulb to wash out the cavity. For a chair the smooth boulder on which Dr. Harris sat when rocking his cradle answered this requisite. For a drill, short pieces of wire were used, and when a cavity was ready for filling and needed cleansing with water the patient was handed a tin dipper and the stream furnished the water. The charge for this work was rather in advance of present-day fees, but there was never trouble over a payment after an aching member was extracted. One-half ounce of gold—the quivalent of $8—was the fee for extraction, and for filling double that amount. When a patient arrived there were a few formalities to go through, as in most cases neither knew the other. If the case was one of extraction, the dentist would go to his camp and get a pair of forceps—the only article belonging to the dentist's kit which he then owned—and extract the tooth. But, on the other hand, if filling was the requirement, the process was of a more slow and tedious nature. The patient having a cavity to fill would usually make an appointment for Sunday, as a good part of a day was necessary for the operation. The doctor would go to his camp fire, which was situated about fifty feet from his cradle, and temper his instruments. Here a small boulder answered very well for a forge. When the tools were got into shape work was begun on the patient. Small pieces of wire from six to eight inches in length and flattened out constituted the excavators. Constant rubbing on a smooth rock, just as a knife is sharpened on a whetstone, kept them sharp. Fillings were made from gold nuggets scraped with a pocket knife into small shavings, then amalgamated with mercury. Silver coin was also used at times, although silver was a very scarce article in that day. A heavy piece of wire served as a plugger to insert the filling. When this filling crystallized it made a very lasting one. Every day while Mr. Harris worked his claim he had one or more patients. For the reason that he came to Californa to hunt gold and not to fill teeth, he did not encourage business. As the country settled around him the pioneer dentist turned his practice over to others who came in later, and when he left that section he did not leave them without a dentist.—*San Francisco Chronicle.*

EVERYBODY LIKES THE DENTAL SUMMARY:—"Your journal is one of the best. I enjoy it very much and receive great benefit from it."—*Dr. R. R. Rathbone, Dillon, Montana.*

"I am highly pleased with THE DENTAL SUMMARY. It is far ahead of any dental journal I ever read."—*Dr. J. H. Stewart, Scio, Oregon.*

"I inclose check for THE DENTAL SUMMARY, 1903. Please remember and notify me so that I shall not allow my subscription to expire, as I feel that no dentist should be without THE SUMMARY."—*Dr. D. M. Walker, Lisbon, Ohio.*

"Am greatly pleased with THE DENTAL SUMMARY. Its articles are always *to the point.* I don't like too much preluding as found in other journals."—*Dr. H. W. Boon, Champaign, Ill.*

"I must say that you have a first-class journal in THE DENTAL SUMMARY. Inclosed find $1.00 to pay for subscription, 1903."—*Dr. A. S. Hopkins, Covington, Ga.*

"I inclose $1.00 for the DENTAL SUMMARY, 1903. I am very much pleased with the journal and always look forward to the next number with interest. It has certainly been helpful to me."—*Dr. J. J. Rapp, Madison, Ind.*

# DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

## ORTHODONTIA—THE AGE FOR TREATMENT.

BY J. N. MACDOWELL, D. D. S., CHICAGO, ILL.

Professor of Orthodontia, College of Dentistry, University of Illinois, Chicago.

The proper age for treatment of cases of orthodontia seems to be in a general way, with the dental profession, problematic. The question arises, why is there such a diversity of opinion about starting the treatment of cases of malocclusion at an early age? Almost every conceivable form of malocclusion in the great majority of cases is partially or completely established between the ages of six years (the age when the permanent central and the permanent first molar make their appearance), and the age of twelve years (about the age when the last of the permanent teeth make their appearance, that play an important part in the different form of malocclusion).

It is a well-known fact to the profession, that almost every case of malocclusion has its foundation laid in the six or eight years of time intervening between the ages of six and twelve or fourteen years. Should it then not be the duty of the profession during this intervening time, of six or eight years, to carefully watch for the slightest evidence of malocclusion? The arches should be enlarged or contracted as the erupting teeth may demand, teeth rotated to alignment, space preserved for tardy erupting teeth, and the occlusion of the teeth carefully guarded against retrusion or protrusion of the lower jaw, for this last condition in almost every instance, has its foundation laid between the age of six and twelve years.

In plain words, simply aid nature in developing the alveolar process to the normal size, and the teeth to their proper contact.

We seldom find malocclusion of the temporary teeth, due to the fact that at birth the jaws are large enough to accommodate all of the temporary teeth, and when they erupt, they do so from before backward. A, Fig. 1, shows the development of the lower maxilla and the space for the eruption of the teeth at the age of seven months; and B, Fig. 1, shows the continuous form of eruption from before backward in the jaws of a child aged one and a half years. The cuts clearly show that there is no opportunity for the temporary teeth to be changed or forced from their normal course of eruption, so unanimously found in the jumping back and forth eruption that takes place between the centrals and the first molars of the permanent teeth. If malocclusion of any form does appear in the temporary set, it usually appears in the malformation of a tooth. A, B, C, Fig. 2, show three cases of this

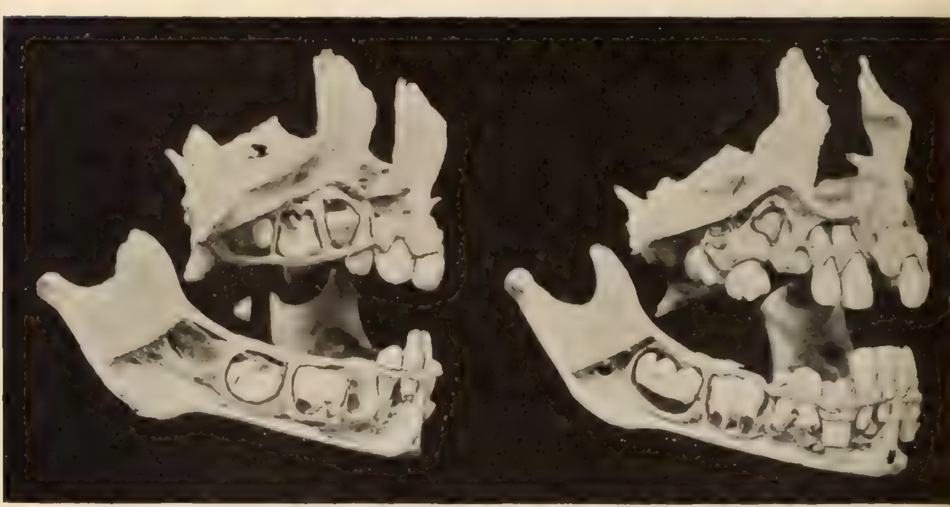


FIG. 1.

kind: A, containing an extra or supernumerary incisor, B has a small tooth fused to the lateral, and C shows the lack of development of the central. As long as the arch is over-developed by a condition, as shown in A and B, it is only in favor of the eruption of the larger permanent incisors, and is also a condition that can be eliminated before the eruption of the permanent teeth, if necessary. On the other hand, if there is an under-developed condition, as found in C, Fig. 2, then we may have trouble, due to lack of development of the tooth, and hence an undeveloped condition of the alveolar process the result, necessitating the enlargement of the arch at the time of the eruption of the larger permanent incisors.

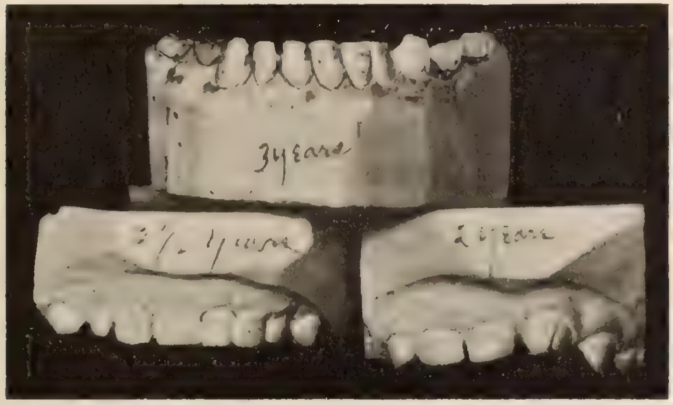
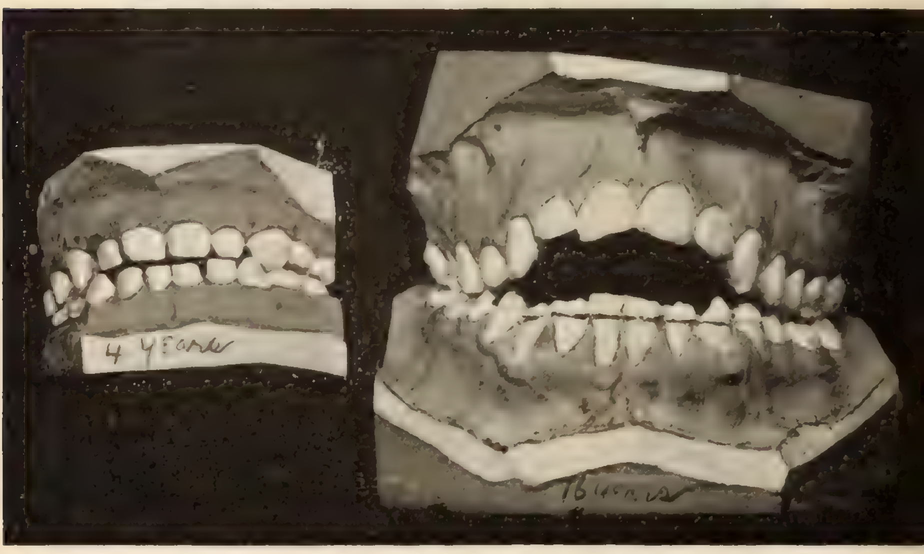


Fig. 2.

Another form of malocclusion found in the temporary set is due to a habit of sucking the finger or thumb, a condition which, if eliminated early in life, leaves no defect, but if allowed to continue during and after the eruption of the permanent teeth, the latter are deviated from the proper course of eruption, the alveolar process is stunted in growth (B, Fig. 3), and the facial appearance of the patient becomes marred.

Such a habit, after it is once well established, cannot be stopped by scolding or bitter drugs on the fingers, for the patient after retiring goes on after sleep unconsciously sucking the thumb or finger. Two methods the author has found successful in eliminating this habit: sew a bandage around hand and wrist and sew this in turn to a strip that is also sewed to the waistband, long enough to give freedom to arms and hands, but still short enough to prevent the child from putting the hand to the mouth.

Another method, designed by Mr. Herrick, is to have the child, especially after the age of six years, wear day and night a hard leather mit without a thumb, and punched full of holes to allow the air to circulate (Fig. 4)—a most satisfactory method.



A B

FIG. 3.

We may say that the varieties of malocclusion found with the temporary teeth are limited, and are conditions that may be easily taken care of in infancy; but to neglect the malcondition of the temporary teeth is just as bad as to neglect the condition of malocclusion of the permanent set.

"I was advised by my dentist to wait until I was a little older," is the remark made by almost every patient. Wait for what? Why, until the condition of malocclusion becomes permanent and so bad that the facial appearance is affected, and the occlusion is beyond complete restoration. Of course, after waiting until the teeth have all completely erupted, adapted themselves to the new position and become surrounded by firm walls, we can slowly and carefully, in time, in

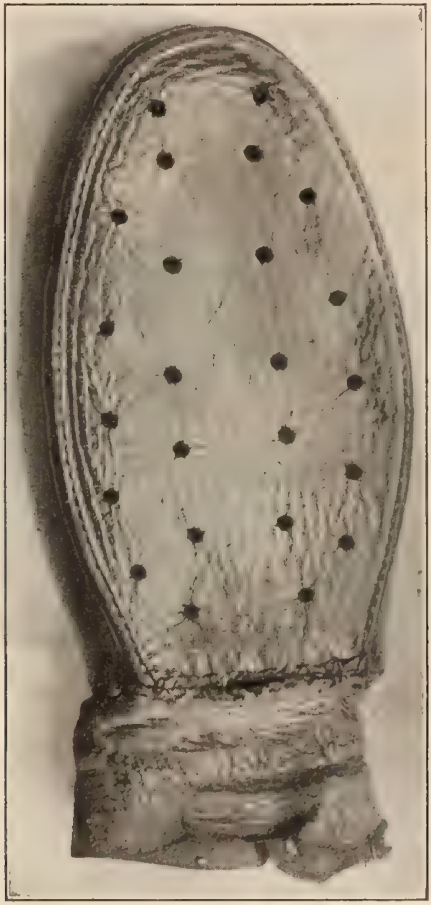


FIG. 4.

many cases almost restore to normal condition. But the first stages of the original condition could have been easily eliminated in less time and with perfectly satisfactory results, also causing less pain, and at the same time opening up a course for the proper development to a normal condition. Figs. 8, 10, and 11 are samples of cases that were advised to wait until they were a little older. No. 8 was advised by two dentists to wait until a little older; No. 10 was advised by four dentists, and No. 11 was advised by three dentists to wait. In fact, almost every patient who comes to the author, either in college or in private practice, makes the statement that he has been advised to wait. Occasionally there are cases where the advice to wait may be perfectly legitimate, as in the case where a lateral or central has been deflected outward in eruption, due to the retention of the temporary tooth until the permanent central or lateral had made its appearance. If there is sufficient space for the accommodation of the tooth, the natural pressure of the lips will perhaps, in favorable conditions, change the course of the tooth (but this must not be depended upon) as it erupts, back to the normal condition, if the temporary tooth is removed in time. To neglect the early stages and advise a patient to wait when the teeth are erupting crowded, rotated, overlapping or otherwise thrown from alignment that will result in permanent change, is an injustice to the patient and a discredit to the profession. Even when the teeth have been moved into alignment by use of regulating appliances and retained for months, the tendency is to return

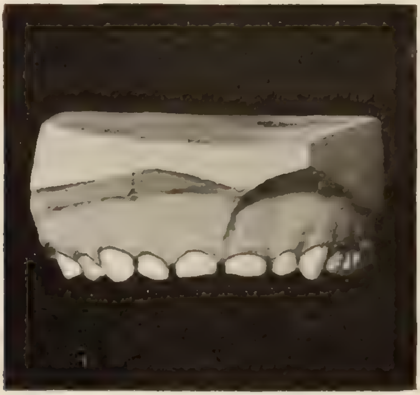
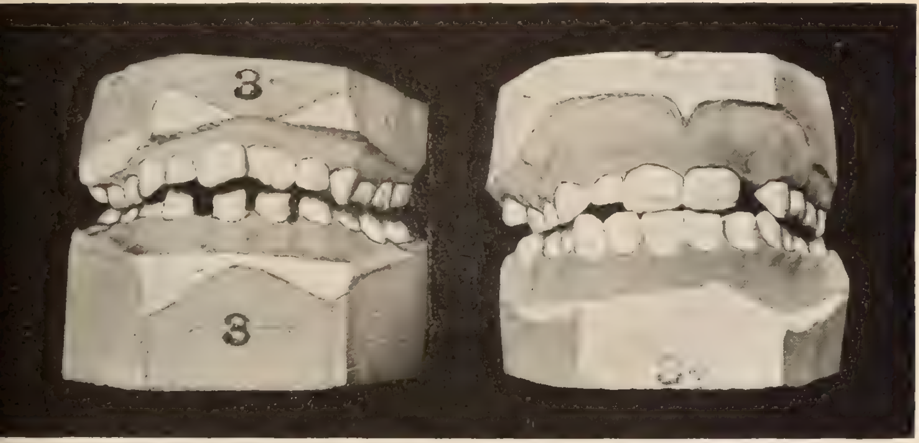


FIG. 5.

to their former position as soon as a retainer is removed; hence the necessity of wearing a retainer until the tooth or teeth are firmly surrounded by a new wall of bone and have adapted themselves to the new position. Teeth that are rotated, overlapping or badly crowded when erupting, *can never align themselves,* for the very shape of the crowns and roots, and the attachment in the alveolar process will not permit this self-alignment.

Occasionally a tooth is extracted in a case where the teeth are badly crowded. The pressure of the muscles and the stress of mastication will in time cause migration of the teeth. In a case of this kind the crowded condition may in appearance be improved a very little, but the normal position and normal contact will be lost forever, the result being a slow but continual change in the position of the teeth, brought on by the stress of mastication. If that portion of the alveolar process in which are contained the temporary incisors is *developing properly* for the accommodation of the larger permanent teeth, the temporary teeth between the ages of five and five and a half, begin to separate and soon stand alone, as shown in Fig. 5. This is an *unfailing sign* that the physiological activity

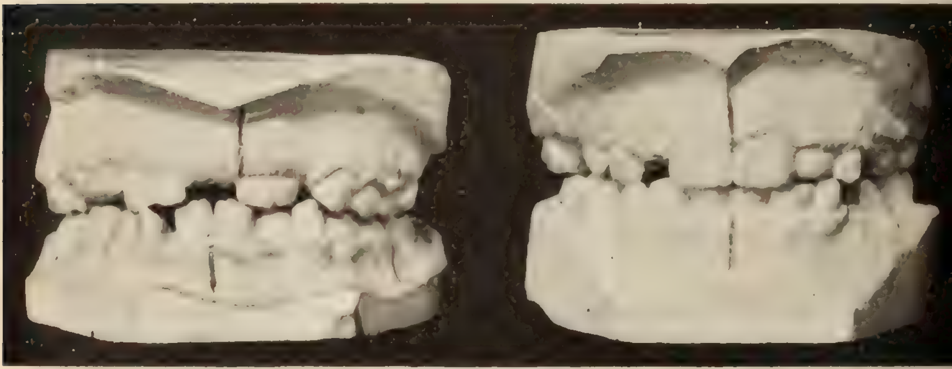


A B

FIG. 6.

of the development of the alveolar process is being duly carried on, and the anterior incisors *will erupt in normal position,* unless the temporary teeth are retained too long. If, however, on the other hand, the proper development of the alveolar process is not going on, the larger permanent teeth begin to erupt badly crowded and on account of their oval shape are soon forced to rotate or overlap each other, as shown in Figs. 6 and 7, which are conditions that are becoming almost as common as caries of the teeth.

The treatment of the case shown in Fig. 6 was started at six years. The arches were not expanded forward, but laterally in the region of the cuspids, until space was gained for the larger permanent teeth. The treatment of the case shown in Fig. 7 was started at six and a half years. The right lower lateral was erupting in lingual occlusion; the other incisors had moved around to the right, completely closing up the space for the right lateral, and changing the medial line of the lower incisors. Besides expanding laterally both arches in the region of the cuspids, it was necessary to move the lower incisor around to the left to restore the median line. The question naturally arises, what would be the result if these two cases, Figs. 6 and 7, were allowed to wait until the age of twelve years before undertaking the treatment?



A B

FIG. 7.

The treatment in the early stages is simplicity itself. A few years of waiting would complicate the treatment and an effort would have to be made to try and restore or improve on what nature had failed to do. At first, with the assistance of light appliances properly applied to broaden the arch in the region of the cuspids, space can easily be made by which the crowded teeth may erupt in their normal position, and thereby aid nature in developing the alveolar process and at the same time to move the teeth to a normal position, B, B, Figs. 6 and 7. At this age the structure can easily be changed. The teeth are loosely surrounded by spongy bone and are easily moved. Force is not needed, simply a gentle pressure to slowly guide the teeth to the proper position. As the treatment is simply following out what nature is trying to do, there is little or no soreness in moving teeth at this age, and not the slightest danger to the large, half-developed healthy pulp of the developing tooth. If, on the other hand, the patient is advised to wait year after year until the teeth are fully erupted and firm in their malposition, the alveolar process has failed to develop properly and the tendency is to allow transition of the occlusion to take place (so-called "jumping the bite") by the improper contact of the cusps of the teeth, which in many cases sooner or later slowly forces the lower

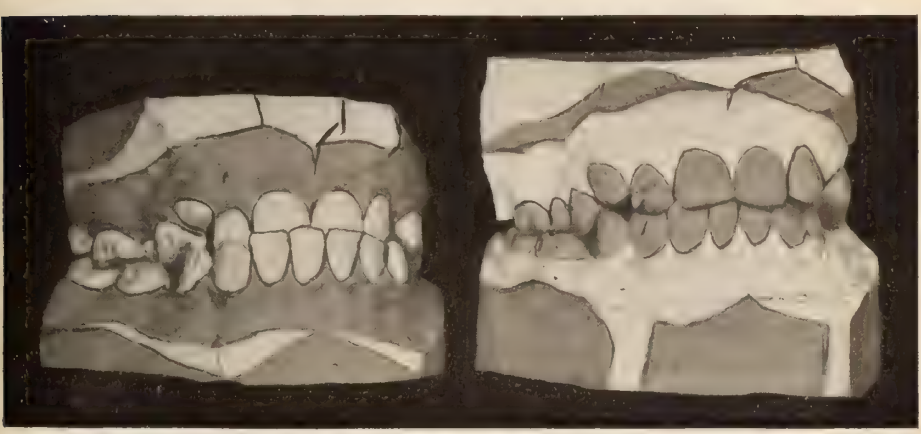


FIG. 8.

jaw backward or forward, as the conditions are favorable. Take the case as shown in Fig. 8. While this cannot be called a typical case of protrusion of the lower jaw, on account of normal occlusion of the distal teeth, still the facial appearance is affected, not by the forward movement of the lower jaw as yet, but by the non-development of the anterior portion of the superior maxillary bone, due, of course, to the lingual occlusion of the upper teeth, which continually crowd the lowers forward and the uppers backward until the space for the cuspids in the upper is entirely eliminated and the lower lips forced outward (Fig. 9), a condition due to the result of waiting.

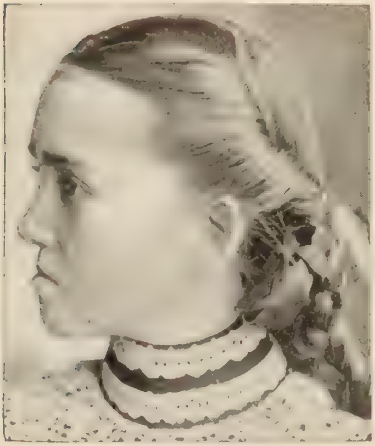


Fig. 9A.

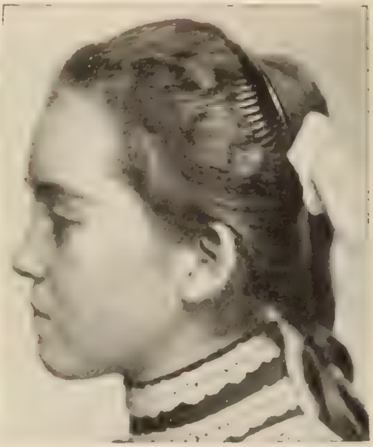


Fig. 9B.

In Fig. 10 the result of waiting is non-development of the alveolar process and loss of space for the accommodation of four of the permanent teeth, two cuspids in the upper and two bicuspids in the lower, by the forward movement of the distal and the backward movement of the anterior teeth. The treatment now necessitates the extraction of four teeth, two in the upper and two in the lower. Of course it would be possible to move the anterior teeth forward and make room for tardy erupting teeth, but this would be an impracticable course, for the reason that the anterior teeth would be forced to stand beyond a normal position to the detriment of the facial appearance, by bulging out the lips.

Fig. 11 is another case where the patient labored under the idea, according to advice received, that by waiting, some day nature would move all into alignment. The teeth erupted slightly crowded and rotated, a condition which has grown worse with advancing age. At this age (thirty years) the teeth could be moved to a normal position by sacrificing the facial appearance. Undue prominence of the lips would be the result. Extraction entirely for the sake of saving the facial appearance is then necessary, a lower central and upper first bicuspid being extracted.

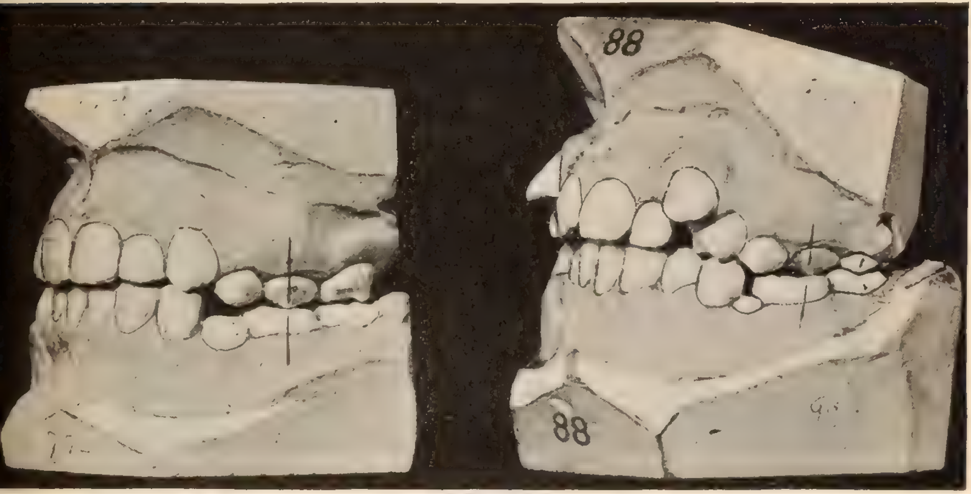


Fig. 10.

Waiting always complicates the treatment of a case. A singular incisor erupting rotated and allowed to remain so, may in time involve the movement of six, eight or all of the teeth; and the position of the lower maxilla as well, and after the age of twelve or fourteen the movement of the lower jaw forward or backward for the purpose of establishing a normal and permanent contact, is in most every case an impossibilty.

To wait is unfavorable for the development of the alveolar process and increases the time of treatment. The teeth are harder to move, have to be moved farther, greater pressure is needed, more appliances are used, patients suffer more pain, extraction of the permanent teeth is necessary, results of treatment not always satisfactory, months of time consumed, too much involved in the treatment, and the heavy stress of mastication to work against.

At the favorable age of six or eight years, when the teeth are erupting, their position in erupting and the occlusal contact are the significant messages as to their future position. All of the tissues are soft and easily moulded; the teeth are easily moved; the stress of mastication is weak; all conditions are favorable, for the movement of the teeth are making room for them. At an early age we do not try to improve or restore; it is not necessary. We simply aid nature in developing to the normal; whereas, in a few years later, it becomes necessary to try and improve what nature has failed to do. We undo or unwind her mistake and attempt to do over again or rewind in another direction.

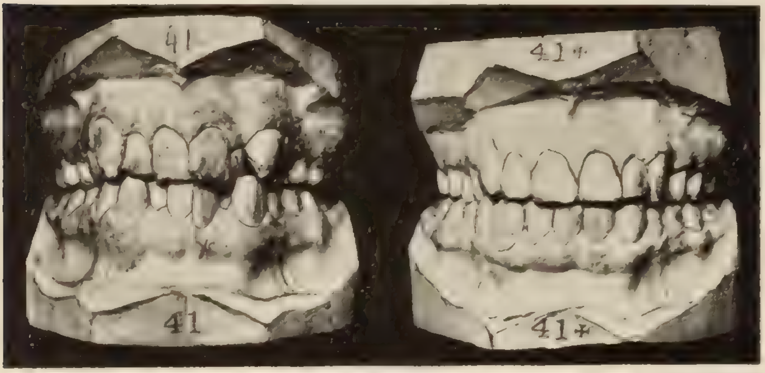


FIG. 11.

The writer asks every dentist who reads this article to carefully and conscientiously study the advantages and results obtained by early treatment of malocclusion and then compare the results obtained with the treatment of those cases that have been advised to wait until all the teeth have erupted. The per cent of *early* successful treatment (that is, restoring all to a normal condition) may be put down as from ninety-five to one hundred per cent. The successful treatment of all cases taken after the age of twelve or fourteen years, restored to a permanent normal condition, is below fifty per cent.

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## AXIOM VS. THEOREM.

BY D. E. MORROW, D. D. S., ST. LOUIS, MO.

Professor of Materia Medica and Therapeutics, Marion-Sims Dental College.

The above caption may seem odd and almost contradictory, for all axioms were once theorems, and if we had dealt with axioms only there would not have been the advance in dentistry that we see at the present time.

There is a place and time to speculate on theories, and the chosen place should not be in the human mouth. Too much of this kind of work has been done at the expense of the teeth.

A large proportion of our dental literature deals with theories, and so perfect is the description of them and so plausible are they made to appear that the reader too often takes these theories for facts, and this at the risk of injury to valuable organs. It was so with amalgams, cements, so-called plastic gold and all forms of crystal gold, patent springs, suction for retention of plates, newly-styled teeth, bridge-work appliances, etc., etc. Many of these are not without value and have their proper place in dentistry, but they have been shoals upon which many a dentist has come to grief, all because he did not prove them to be applicable and indicated for the condition in which used.

I regret to say too many dentists have been looking for the easy way, and quickly fall in with any new proposition which gives promise of this attainment, thus becoming fertile soil for the special demonstrators who travel the country introducing their new appliances and materials.

In my practice my plan all along has been to hold fast to those principles, materials and appliances which have been proven, until time and experiment shall give me something better.

There are well-known physical laws which must be applied in building bridges for the mouth, and no matter what the scheme, or what kind of attachments are used, if you transgress these laws your bridges will sooner or later be a failure. The same must be said about the preparation of cavities for fillings. Principles must be followed as closely, and the amount of force to which the bridge or filling will be subjected, measured as accurately, as does the architect reckon the stress on different parts in erecting a building, *i. e.*, in deciding whether a bridge should be made for a given place, or how much of a tooth should be cut away in preparation for a filling, careful thought should be given as to the approximate force and strain to which it is subjected, also the closest scrutiny and critical examination to each individual part, and if there be one weak place that cannot be made as strong as the rest, condemn the whole piece. Apply the same principles to each operation in dentistry, and you are dealing with axioms.

An axiom is a principle admitted to be true, and there are plenty of axioms to guide the practitioner in his work, so that he may become an axiom himself, in whom the public trust and upon whom they lean with perfect confidence.

Not so with the practitioner who deals largely with theorems. As fast as his theories crumble, and many of them break as the bubbles, his reputation suffers, and by and by he becomes a theorem in fact, with whom the public are afraid to trust themselves, for a theorem is something to be proven.

In my years of clinical work, as well as in my practice, I follow proven rules to guide me. This method of practice I have tried to impress upon those who are under my instruction, teaching both by precept and example.

### AXIOMS.

The following are some of the axioms which I try to impress upon them:

In mouths where there are a number of carious teeth, in process of decay, the secretions of the mouth, if tested by litmus paper, will always show an acid reaction. Correct this, and you have stopped other teeth from decaying. This can be done by using an antacid mouth-wash, and antacids given internally if needed. Perhaps the best antacid for such occasions is glyco-thymoline as a wash and magnesia internally when needed. This treatment I deem as essential as filling the teeth already decayed. If your work is well done it prevents recurring decay, a feature staring so many dentists in the face. The theorem applied here would be that the mission of the dentist of the future will largely be that of prevention, and I believe we will see this theorem an axiom, but there would be just as much sense in using that now to the exclusion of the repair process as there is in using any new material or appliance to the exclusion of all others, as many do, until they find them worthless. No class of people are so overrun with new ways, easy ways, new appliances and materials, as the dentist.

In filling, access is the first and most important requisite Have access to all parts of the cavity, no matter how much of the tooth structure you are compelled to cut away to get it.

In opening into a pulp canal, open with a large bur and uncover the whole chamber, and then you will have very little trouble with the canals.

In selecting my pluggers for gold work and to be used with the hand-mallet, I use, as far as possible, straight pluggers, or, if I am compelled to use a curved plugger, use only such ones where the end of the plugger is in direct line with the handle.

If I were to be confined to one plugger for gold fillings, I would select Webb No. 5 as the one having combined in it most of the requirements for all cavities.

In condensing gold you should have a direct blow, the force of which should be against the walls of the cavity, instead of from it. If, for any reason, your blow cannot be directed as above described, do not strike at all, but use hand-pressure. Every stroke of the mallet which does not drive the gold closer against the walls of the cavity *must* drive it away. We have all seen many leaky fillings because the force of the blow in condensing tended to drive away from the walls of the cavity. Disregard of this principle in filling teeth is not confined to students. Gold works so easily that, given proper access and edge strength, there is no excuse for a leaky filling if gold is forced against the walls instead of away from them. Some of our poorest operators do the most pounding. They pound the gold, they pound down the margins, they pound out the fillings.

One accepted axiom which adds more to the longevity of a piece of work than any other is: A filling or bridge is "just as strong as its weakest part." This is as true as the proverb from which it is obtained—"a chain is just as strong as its weakest link"—break one link and your chain is broken.

# PRESSURE ANESTHESIA FOR PULP EXTIRPATION

BY W. H. GENSLEY, D. D. S., CINCINNATI, O.

Professor of Chemistry and Metallurgy, Cincinnati College of Dental Surgery.

One of the newer methods for the removal of pulps is the so-called pressure anesthesia method. Unlike many other "fads" in dentistry, that are enthusiastically heralded but have their day and are discarded as failing to meet requirements, this method is one that is practical, and, where applicable, is, in my opinion, far superior to any other way of destroying and removing the dental pulp. It obviates the use of arsenious oxid and the danger of subsequent pericemental inflammation. The operation of devitalizing and filling the tooth may be completed at one sitting, which is often an advantage to both patient and operator.

This method can be applied to all the anterior teeth, the bicuspids, and in mesial and occlusal cavities in the molars; in some mouths is it also possible to apply it in distal cavities in molars. It is self-evident that the better the access the easier the operation. Free exposure of the pulp, of course, facilitates the work.

No doubt every one using the method has his own way of applying it. My own procedure is as follows: Usually first apply the rubber cloth—this is not always necessary to begin with, but is better, because it isolates the field of operations, and there is no interference from saliva—then make as free an exposure of the plup as possible, causing it to bleed; next pulverize a few small crystals of cocaine on slab, dividing it into two portions; to one portion add a drop of alcohol, which dissolves the cocaine; then take a piece of spunk little larger than a pinhead, saturate with alcohol, take up the alcoholic solution of cocaine, and then the remainder of the dry powdered cocaine, which gives practically a saturated solution, and apply to the exposed plup, carefully pressing the spunk upon it. Now take a piece of unvulcanized rubber of proper size, place in cavity, and with a burnisher gradually exert and increase pressure. It is sometimes quite painful for a few moments, but the pain rapidly diminishes as the cocaine is taken up by the pulp. In from two to three minutes the pulp may be removed without the slightest pain. Occasionally two applications are necessary. Where the tooth is so sensitive that an exposure cannot be obtained without causing too great pain, apply the treatment same as if pulp were exposed, and after a few minutes it will be possible to expose the pulp with a minimum amount of pain; then repeat the treatment. Sometimes there is considerable hemorrhage, but this may be easily controlled with almost any styptic. After all debris has been thoroughly removed from canals they should be rendered aseptic, and may then be filled according to the methods usually employed by the operator, and the whole operation of filling the tooth completed at this sitting.

Occasionally a case presents itself where the method does not seem to work, although the conditions may appear favorable. This may be due to some peculiarity of the pulp itself, as hyper-congestion, or to idiosyncrasy of the patient. But in nine cases out of ten, where the cavity is accessible so that pressure can be exerted, I have found no difficulty in applying pressure anesthesia successfully. In a period of about two years, during which time I have employed this method, can recall no case that has given trouble afterwards.

# REGULAR CONTRIBUTIONS

## PORCELAIN DENTAL ART.*

### BY DR. C. H. LAND, DETROIT, MICHIGAN.

Porcelain as applied in dentistry prior to the year 1885 was exclusively confined to the manufacture of artificial teeth and a few cavity-stoppers. The dawn of the new era, which revealed a field of greater scope and increased value, was first made known to the profession by the publication of an article in the *Independent Practitioner* of August, 1886, entitled "A New System of Restoring Badly Decayed Teeth." Following this was another article, appearing in the February, 1887, number of the same journal, entitled "Metallic Enamel Sections: a New System for Filling Teeth." In addition to this, an original paper, read before the Central Dental Association of northern New Jersey, entitled "Metallic Enamel Coatings and Fillings," appeared in the August, 1887, issue of the same journal.

All three articles were profusely illustrated, and, combined, they gave a very elaborate description, showing various forms of porcelain contours, fillings, crowns, and enamel caps—or the jacket crown. Especial attention was called to the metallic matrix as a means that would enable one to practice a great variety of operations. This matrix was to be formed of any suitable metal, specifying either gold or platinum foil as being the most appropriate. Also the restored portions of the teeth, consisting of fillings, contours, or crowns, were to be composed of glass, porcelain, gold, silver, or rubber—in fact, of any suitable substance. Citing from my patents of 1887 and 1888, a part of the specifications declared that the object of the invention included "means for molding indestructible substances into sections corresponding in form to decayed portions of the teeth. A metallic matrix is formed by swaging or burnishing a thin metal into the cavity to secure an impression thereof. Any suitable metal is used, as platinum or gold. A matrix so constructed is filled with any suitable plastic substance, preferably porcelain, gold, glass, or rubber. The metal fitted to the cavity or a portion thereof may constitute a mold, and the section conformed thereto may be separated therefrom and engaged in the cavity without the mold. No pins in this case are required."

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*Read before the Odontological Society of Western Pennsylvania, Pittsburg, March 10, 1903. Copyright, May, 1903, by Charles H. Land, Detroit, Mich.

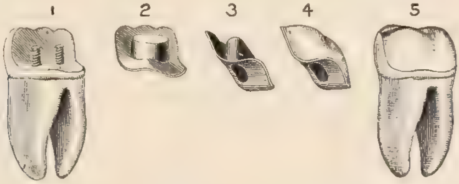
It may also be mentioned that before the issue of my American patents I had secured patents in Canada, France, Italy, Great Britain, Austria, Spain, and Belgium; that the German patent was refused in view of the illustrated descriptions published in the *Independent Practitioner* two years previous to the filing of the application, which fact made it public property according to the German patent law. It will also be well for me to state that my principal object in taking out foreign patents was with the view of preventing others importing and obtaining patents on my inventions in foreign countries, and then to make them public property. This was also my greatest desire for the United States, and by reference to those original articles you will find my sentiments publicly announced. Since then I have secured numerous other patents on the same basis, not because I expected to obtain royalties from my fellow practitioners, but wished to be permitted to practice my own inventions free from exorbitant tax. I am at least willing to pay the usual fee of sixty-five dollars for the sole purpose of being able to file expert specifications and thereby put them on reliable and official record. This establishes the prior and legal right to original investigations, and should at least debar the numerous individuals who flippantly declare they did it twenty years ago. Such persons generally lack the evidence or proof of their assertion.

### PORCELAIN INLAYS.

With the advent of the metallic matrix, numerous other operations were rapidly developed. Some of them I consider of far more importance than the simple inlay. However, the mass of the profession seem inclined to concentrate the major portion of their attention upon this particular operation, granting but little time or consideration for the more important and wider field of opportunities found in contours, crowns, caps, and bridge-work, all of which may be manipulated in porcelain with great satisfaction and be completely successful. Eighteen years of practice in all classes of porcelain work has demonstrated that when an inlay is appropriate no other class of work will be as suitable in the same place; but where one opportunity of this nature is presented, fifty per cent. more is demanded in the other classes known as crowns, caps, contours, and bridge-work. See illustrations A, B, C, and D.

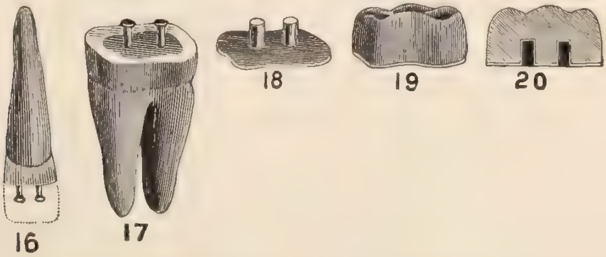
(A)

RESTORATION IN PORCELAIN ON GOLD FOUNDATIONS.



1. Illustrates gold posts anchored in the cavity by malleting gold foil about them and covering the surface of the cavity in the same manner. 2. Platinum matrix to fit over the gold posts. 3. Side view. 4. Porcelain fused to the matrix. 5. Completed section cemented in the cavity or amalgamated to place.

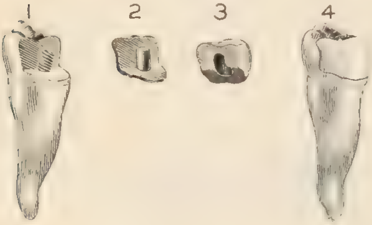
(B)



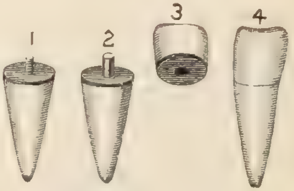
16, 17, 18, 19, 20. Modifications of the same class of work as in illustration A. See also Bicuspid (C), 1, 2, 3, 4, and Incisor (D), 1, 2, 3, 4.

Illustration E is a suitable example strongly indicating characteristic places for inlays, and yet when physiologically considered, and whether they are filled with gold, amalgam, gutta-percha, or inlays, the results are generally only very temporary. This class of cases is almost always due to erosion, and all who have practiced dentistry for many years know from experience that decay will rapidly extend, attacking all the remaining parts of sound tooth-structure left exposed; consequently I have found it more satisfactory to cover such examples entirely with enamel metallic caps, or to form a complete hood of porcelain. One other serious objection or weak point in the inlay system is the superficial washing out of the cement. No matter how perfect the work, in many instances stains will gradually collect between the inlay and the wall of the cavity, and before many months your patient will return and request you to remove the dirt from the joint. To overcome this trouble, it has been my practice to first line the cavity with gold-foil and then fit my inlay, whereby the gold exposed would be reduced to a mere threadlike line, which is far less objectionable than the stained joint. Do not infer from this that I decry inlays altogether. Far from it, for there are many instances where the secretions of the mouth are favorable, and such objections are not apparent even after twelve and fourteen years of use.

(C)

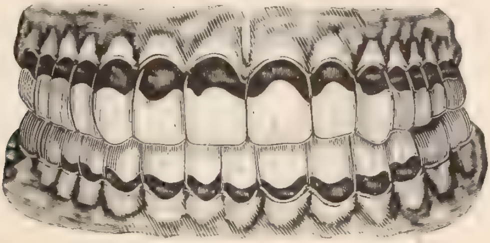


(D)



One more valuable fact that has been proved: In contours and inlays where the metal matrix had not been removed, and where a very small amount of platinum had been permitted to overlap the edge of the cavity, I can say that after twelve, fourteen, and sixteen years of use it has been very gratifying to have my patients return year after year with all of this class of inlays and contours in the best condition, the thread-like edge of the platinum keeping its polish, and the general appearance of the work free from the objection of unclean joints.

(E)



It will be observed that the platinum-foil extending slightly over the edge of the cavity forms a lapped joint. This simply obliterates all chances of stains collecting in a joint where the cement has been superficially washed out, and no doubt a joint of this description is the most reliable.

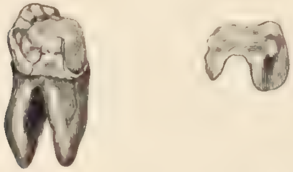
That the cement does gradually dissolve out of the joints in a very large percentage of inlays is a proved fact. However, it is merely superficial, for in eighteen years of careful observation, I have not been able to discover a single instance where the cement had completely washed out, under the most careless manipulations; that at best the disintegration was slight. In any event we can be assured that all inlays, no matter how carelessly adjusted, are certainly a better protection than the cement alone, and I will suggest that we must not be too extravagant in our expectations, but be satisfied with the slightest advantages gained, always hoping for more as the art becomes better comprehended.

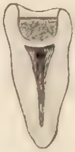
During the past eighteen years of especial practice, I find that the only way in which my patients have lost any tooth-structure was by the receding of the gums and not by decay intervening between the sections of porcelain and the wall of the cavity in the tooth. In some instances I have had my patients return with the section or contour that had been forced out of the cavity, sometimes within a week or two, and again not for several years, but in such cases the cavity would invariably be protected by the thin coating of cement that remained intact, and in the majority of instances the section or inlay was re-cemented in place or the section reconstructed and a better retaining form provided.

Recently I have been developing and perfecting an additional improvement, and shall introduce it as

### PORCELAIN-VENEERED CEMENT FILLINGS AND FACINGS.

In the illustration F, 1 represents a lower molar, showing the cavity partially filled with cement or gutta-percha, leaving but one-fourth more to complete a perfect contour. The figure 2 is a veneer of porcelain formed from the cavity in 1 according to the usual manner of making inlays. This veneer is not more than the fortieth part of an inch thick. On the approximal side of this thin veneer is a medium composed essentially of certain oxids combined with a suitable flux. This is painted over the surface in a similar manner to that practiced by china decorators, and then submitted to a temperature equal to the melting-point of pure gold, and when allowed to cool the result is that you have established a film or coating that is homogeneously combined with a vitreous mass. Substantially it is a coating of oxyphosphate with which the phosphoric acids in all our usual cements will chemically combine. It will be readily understood, therefore, that when a cavity in a tooth is filled with the cement and a veneer of this description has been so prepared and pressed into place, in a few minutes we have practically a porcelain-coated cement filling—in other words, a protected cement. Some of the most valuable qualities of this class of operations consist in the greater ease of cavity


(F)


(G)

preparation, greater immunity from thermal changes, and, in such instances as those in which pulp-capping has been practiced and congestion or pulp-devitalization may occur, ready accessibility may be obtained by grinding through the thin veneer of porcelan and splitting it off. And, on the other hand, where a thick mass of porcelain has been cemented in a large cavity it will be found exceedingly difficult and painful to remove the same, especially when the pulp is in the first stages of congestion.

In connection with the preparatory work I partially fill the cavity in a tooth with a form of sheet gutta-percha that is composed of about one part gutta-percha and four parts zinc oxid. I look upon this combination as very valuable as a tooth-preserver, in view of the fact that the tooth may be filled within four-fifths of the whole space of the cavity, and from its containing such a large percentage of zinc oxid. Our common zinc oxyphosphate cements, owing to the phosphoric acid they contain, will also adhere firmly to the gutta-percha filling. The illustration G shows the relative position of porcelain veneer, gutta-percha filling, and protected pulp.

## HIGH- AND LOW-FUSING BODIES.

Recently this subject has been discussed by some members of the profession, and much confusion has been developed but no satisfactory conclusions reached. In offering my assistance on the subject I will suggest that both bodies and enamels that are appropriate for dental uses have a practical fusing-point that ranges from about 1900 F. to 3400 F., and that within this compass from twelve to fourteen varieties may be of some substantial value, and that in proportion as our facilities will enable us to ascend in the temperature of fusing-point the ideals of perfection are the nearest accomplished, and in proportion with greater ratio, as we descend toward the lower-fusing mass we narrow the field of its utility. The reasons become quite obvious when we consider the wide differences in the properties that are chemically developed by the uses of the various fluxes necessary in order to raise or lower the fusing-point. Each material is distinguished by individual properties that are more or less desirable according to the purposes or uses designed.

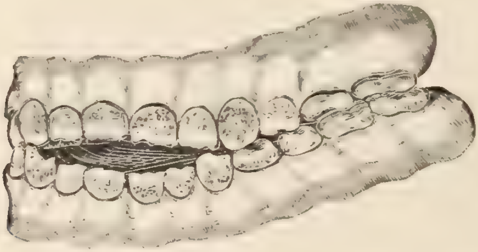
In dentistry we seek for the qualities that demonstrate the inherent power of maintaining the most perfect form or contour both before and after fusion, and yet will show a perfect glaze. Also, porcelain bodies must retain their color after repeated reheatings, and show the least tendency to shrink. All low-fusing bodies seriously lack such properties, therefore their uses in porcelain dental art will be very much abbreviated. If the broad claims that some manufacturers and dentists are making were true—theorizing that a low-fusing vitreous mass is equal to the high fusing, alike in strength, color, and power of contour—then we ought naturally to be amazed at the foolishness of our leading tooth-manufacturers, who have for years, as their criterion of excellence for their wares, held to the highest possible point of fusion; and we would be inclined to suggest to them that their teeth had better be made of glass.

Just a few more remarks on one other most important branch of this interesting specialty, which I shall refer to as

### ENAMELED METALLIC CAPS.

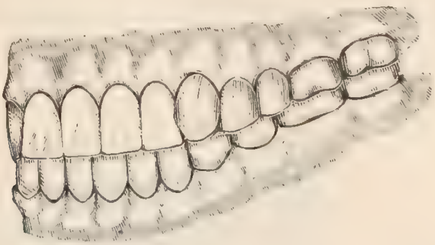
Illustration H represents a case in practice that involved thirty-one teeth. After the brown color was polished off the surface, enameled metallic caps were cemented to them and when completed they appeared as seen in illustration I.

(H)



The operation not only provided thorough protection from future decay, but also the natural color and perfect form of the original design of nature was so complete that the art was concealed. Also the nerves or pulp were held in their normal state.

(I)



It is now about ten years since the operation was completed, and not any sign of decay has intervened, nor has any discomfort whatever been experienced. The patient was a young miss of about nineteen, whose teeth were entirely denuded of their enamel. The etiology of this case might be very interesting to those who make this feature a scientific study, as the same defects were inherited from the father by both the son and the daughter. I have in my possession a specimen of the son's teeth, consisting of one central incisor, canine, bicuspid, and molar. These were what I could procure of twenty-seven that were extracted from the young man's mouth in order to give in return a miserable substitute. All the pulps in his teeth were sound. The father had gone through the same experiences; but how different the results in the daughter's case!

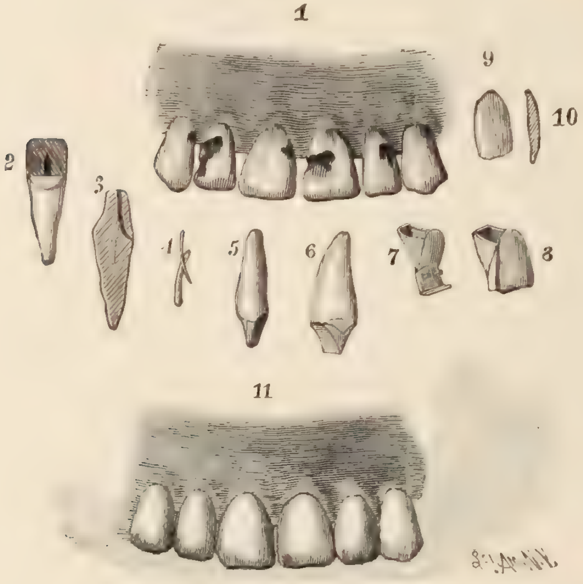
Illustration I represents the comparative difference in their appearance.

The restoration was accomplished by covering the molars, including the third molars, with gold caps, and all the remaining anterior teeth, twenty in number, were restored with enameled metallic caps.

### ENAMELED CAPS OR JACKET CROWNS.

In illustration J, the figure 7 shows a thin jacket of metal (Browne & Sharpe gauge, from No. 30 to No. 33), which is composed essentially of an alloy of platinum and iridium, pure platinum being too pliable for durable work. The latter is also more expensive owing to the fact that in order to obtain a relative strength, the equivalent in thickness would have to be about No. 24 to No. 27 B. & S. gauge. Not only this, but it would be too thick about or between the teeth, and the results would be inferior. The illustration J, at figure 7, shows my

(J)



original plan of construction. It will be observed that there are two small retaining pins established close to the incisal edge. This is intended to produce a mechanical retaining device to hold the porcelain body secure to the metal base, for we must realize that a vitreous mass, like all our porcelain bodies, does not strongly adhere to non-oxidizable metals and will readily peel off. For the past twelve years I have been dispensing with the use of the pins, having found by experience that with pockets or slight undercuts formed by tapering the end of the tooth-structure, as shown in 5 and 6, and then fitting to such ends a matrix of soft platinum foil and passing over this the telescope cap of platinum and iridium, that when the latter is conformed to simulate 7, it will differ from the former plan of construction in the fact that between the wall of the cap and the platinum matrix V-shaped pockets will be formed. Between the facing and the prepared base a porcelain body of a slightly lower fusing-point than that fused into the pockets in interposed. This forms the adhesive medium that when again fired unites the veneer homogeneously to the prepared porcelain and metal base, as illustrated in 8. Caps made after this plan are wonderfully strong, and will thoroughly preserve the teeth from future decay.

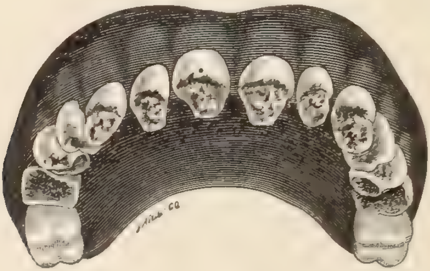
One of the first cases that I brought before the Michigan Dental Association in 1886 is still preserving the incisor teeth that at that time were adjusted for a girl fourteen years of age. This has now been in use seventeen years. In connection with such long periods of time, the cases in which young teeth are covered, especially the class that will generally present from three to four extensive cavities on each of the four incisors, are just the kind that the ambitious dentist desires to fill with gold, and to the sensitive patient it seems like a discouraging proposition. And it is the more so when we realize that this is the beginning of the most important period of the life of young people. They dislike to acknowledge the permanent disfigurement, knowing that a row of gold fillings would help to illuminate the defects of decay. In such cases it has been my practice to cover such teeth with enamel This is generally accomplished without the necessity of pulp devitalization. In numerous cases where the six anterior teeth have been so treated, after a number of years I have found it necessary to readjust the cap. Some had served their purpose eight, ten, and twelve years, and the necessity for renewal was due to the continued development and extension from natural growth, which after so many years gradually exposes the joint that was originally obscured by the festoon of the gums. It is important to realize that young teeth may be so well protected during periods so favorable for their development, with the normal functions of the tooth's vitality continuing under the cap, that when the time comes for readjustment you have the great satisfaction of providing another lease of ten or twelve years on sound and healthy foundations.

Referring again to the thirty-one teeth that were capped, where all the pulps were preserved, I could add another instance where twenty-eight individual caps have been standing the test for about seven years, and in smaller proportions a much larger number that have been serving their purpose fifteen years. All these, and many more, have proved that when enamel caps are properly constructed they are among the most durable and satisfactory methods of preserving and restoring defective teeth. In reality, this is a system or method of artificially clothing teeth, and is equivalent to, if not safer than nature's own enamel. I have enjoyed the extreme pleasure of examining these cases every six months to see that no decay starts beneath the caps, and after eighteen years, in these particular instances, all that my patients have found it necessary to do was to keep their teeth properly cleansed.

I may ask, under the circumstances, providing no other provision was available, What would you do if confined to the use of older methods of tooth-crowning? Or, What other way could be suggested without the necessity of the destruction of at least fourteen pulps?

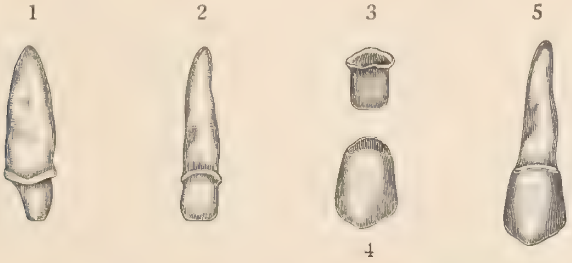
Pulp-destruction should always be the last resort. Following this principle we keep in view opportunities that favor the highest possible skill. I will offer in evidence illustration K.

(K)



This represents a group of teeth showing a deficiency of enamel, the patient being a girl sixteen years of age. All these teeth were brought back to their normal appearance, proper contour, and usefulness, relying exclusively on porcelain veneered cement fillings, contours, and entire hoods. Illustration L is a example demonstrating the method of procedure. I select the canine, 1 in the illustration. The first step is to form, by means of a small carborundum disk followed by small enamel burs, a circumscribed ledge or shoulder just in line with the gum. (See the figures 1 and 2, illustration L.) This should consist of a sufficient quantity of the natural enamel left intact as a guard against any foreign body coming in contact with gum tissue, thus establishing the artificial joint where it is possible to finish it parallel to nature's outline. In this way no overlapping shoulder is present as would be in the case of caps of metal or bands. To remove what is left of the balance of the natural enamel a series of grooves are cut across the surface at wide intervals. It then becomes comparatively easy and less painful to remove the enamel small sections by means of a sharp chisel. (See 1 and 2, as the teeth would appear with all enamel chipped off.)

(L)



The figure 3 is the platinum foil matrix that has been fitted to 1, while 4 is the hollow veneer or shell that has been formed over the mtarix. After this stage the matrix is removed. The hollow veneer then consists purely of block body as a first foundation, and an intermediate, slightly lower-fusing body, and the very thin facing or tooth form, all fused together, and when completed it represents in reality the equivalent to nature's own enamel. And when cemented over the prepared tooth, as shown in 5, it will be seen that the defective tooth has been provided with a complete coat of artificial enamel which to all intents and purposes restores the defective parts to their normal appearance in form and color, as well as their utility; and I feel sure, from long experience gathered from the evidences of analogous applications of porcelain, that this new process is likely to prove the most efficient method of tooth-restoration and preservation that has ever been devised.

## THE FIRST MOLAR OF THE PERMANENT SET OF TEETH.*

### BY L. ASHLEY FAUGHT, D. D. S., PHILADELPHIA.

A consideration of the first molar of the permanent set of teeth involves a close examination into the life history of one member of a class of most useful organs. A life, interesting, unique, often sad, and not infrequently tragic.

The teeth are very much like individuals. They have a period of being prior to birth, they are born; they have a life history; bearing relations one to another, and to the whole community in which they exist; they pass away, and their passing is sometimes with rejoicing, but more often a cause for mourning.

A comprehensive glance over the life of this member indicates a destiny for heroic duties—demands will be made not only for usual work but also for peculiar and important services, a life possibly to be longer than the life of its fellows.

Surely from inception to birth, and during the early months thereafter, there should be thrown around this child of destiny all possible care and thought, that it may be nurtured strong for the race set before it; and yet, the contrary is more often its lot and portion. Like the child of adversity, its strength is sapped even in the womb, and the environment into which it must make entry into visible being is usually none of the best.

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*Read before the Odontological Society of Western Pennsylvania, March, 1903, Expressing more definitely the meaning drawn from this comprehensive look, it is to be said that the first molar of the permanent set of teeth is a very important tooth among teeth. It has indeed been aptly termed "the patriarch among teeth," coming the first, with the possibility of being the last to depart from service. That in addition to the general duty laid upon all such organs of mastication, it has the most important and special duty of supporting the jaws during that period in which the roots of the temporary teeth are being absorbed, and while the crowns of these teeth have nothing firmer than gum to rest upon. A special and peculiar duty which cannot be accomplished by any other tooth. During this period the work of mastication devolves upon the first permanent molar, for from the time that the first dentition begins to be broken up, and until the second dentition of the permanent teeth is fully arrayed, the bulk of the work of mastication has to be done, if done at all, by this despised first molar.

It is to be said that in the early stage of its existence, before eruption, it must give of itself the germs for the second and even the third permanent molar.

It is to be said that though it has been erroneously spoken of as the sixth-year molar, presumably with the idea that its eruption should take place at the sixth year of child life, yet close observation goes to show that it should not erupt at this age. It not infrequently erupts at the sixth year and often appears at the fifth year of life, but whether it comes at the fifth or the sixth year, such appearance is premature, for with any but precocious Americans, it rarely erupts until the seventh year. Eruption earlier than this period is always proportionately at the expense of its nutrition and calcification.

It is to be said that for the services required of the first permanent molar, it should have the finest constitution, and its early life be spent in the best environment, but that in reality it comes thrusting its head into a hot-bed of infection. It is located in the warmest and most remote portion of the mouth. A positon most favorable to the development of attacking germ life, uncleanliness, and chemical decomposition. It is surrounded by broken-down, temporary molars, the nearest neighbor, the second temporary molar, being usually badly decayed, if not abscessed and reeking with pus. In this evil environment it is long held down under overlapping gums.

Are not all these conditions reason sufficient to explain why this tooth should be the weakest of all the teeth? Need we wonder that it is a weak tooth? Need we marvel that it decays early? Rather should not we marvel when, once in a while, though rarely, we meet with first molars which from their inception and all through life are veritable giants, erupting strong, and through the succeeding years requiring little or no attention at the hands of the dentist?

In full possession of these facts, what ought we to do with this tooth? May we not well pause, as upon this occasion, and renew our knowledge? May we not well consider our methods of treatment, that we may not act in haste and repent at leisure? It seems very strange that a tooth so long studied by a thoughtful profession, has not had determined for it a proper and definite treatment, the results of which should ever and always be beneficial. It has been well discussed from every point of consideration, and it would be presumptuous in me to expect to present here anything really new relative to it.

Its condition is such that with many dentists its fate is sealed from the beginning. A determination is made to nurse it along, if possible, only to the time of the eruption of the second permanent molar—to from five to six months prior—and then banish it from the mouth. So sweeping does this decision for banishment become, that if the condition of one first molar is wretched, all four must share in this fate, even though the other three be rather hopeful in character. The teaching being that if the first permanent molars are extracted at this time, the second permanent molars will move forward and the loss of the first molars will never be felt, and that to be rid of them early is to be rid of a great deal of annoyance and trouble for both patient and dentist.

Moreover, many who do not determine that it is a beneficent action to remove this tooth for this cause of general wretchedness and the difficulty of its permanent preservation, feel that they have good reasons for sacrificing it later in life, advocating its removal to make space for erupting permanent teeth in narrowed jaws.

Is the profession ready to accept this treatment thus proclaimed by these extractionists? If so, then the reasons therefor should be clearly and scientifically defined, and the results of such procedure should be known to be beyond question the best treatment.

It is not true that the preservation of the first permanent molar is peremptorily demanded? Has it not been shown that it has functions to perform which cannot be expected from any other tooth?

Does not the future facial expression of any individual depend upon the correct interlocking above and below on each side of the mouth of the first permanent molar? Does not this tooth fix the length of the jaws, and have much to do with the determination of the length of bite of the rest of the teeth?

Before this array of requirements, should not the destroying hand be held in check? Should that which nature has provided be wiped out unless one stands prepared to fully supply a condition which beyond question will subserve the same purposes? Your essayist, for one, feels that this tooth should be preserved at all hazards and has reached this decision most thoughtfully, and in adopting this policy for any patient, does so with a full knowledge that it will not permit of any change later in life.

The first permanent molar may be a troublesome and unsatisfactory organ of mastication, but the eyes are not to be shut to the fact this is not its whole purpose—a recognition is to be made of a duty above and beyond this, and one so imperative in its nature that this tooth is not to be ruthlessly removed and the patient given a weak instead of a strong appearance in face through life. Acting with a full appreciation of the obligations thus assumed by a purpose of retention, care is devoted ever and always to the deciduous teeth, not because of any intrinsic value in these teeth themselves, although indeed they have a work to do; but to prepare the way for the coming of the first permanent molar—the proposed advent of an important tooth. To develop it strong and to give it healthy eruption. To know of this purpose you have but to call up in memory how frequently you have looked into baby mouths and seen the distal surface of the second temporary molar broken down and, acting in conjunction with the anterior surface of the incoming permanent molar, has formed a funnel into which food was jammed and carried down into the interdental space, to the breaking up of the gum. In the pockets thus produced most destructive agents generate and act upon the anterior surface of the first permanent molar, making a spot of early decay and not infrequently wrecking the entire tooth. Here must be bent ever watchful and strenuous efforts, for well do we know that this is not the end of the chapter, but that a child will not chew upon such tender relationships. Decay from non-use and the accompanying lack of cleanliness will add its quota to expose, if not wholly destroy, the pulp of our prescious first molar. No matter how wretched the condition, do your best, first, last and all the time; for better, far better, treated and crowned roots, than no vestage of a first permanent molar at all. If from any untoward causes the preservation of the second temporary molar intact is prevented, or the keeping of restored contour, then it will be found often to be good practice to cut away the distal surface of this tooth so as to promote a self-cleansing relationship with the first permanent molar, affording through a period of from three to five years great prevention against the spot of decay upon the anterior surface of the first permanent molar. Careful investigation will show, too, that not infrequently the supposed moving forward of the second permanent molar is in reality but slight, and that the apparent and wished-for condition is produced by a retrograde movement of bicuspids and anterior teeth. How frequently are we called upon to notice a widening space in the center of the superior arch, the cause of which is often due to the loss of the first permanent molar? its removal having permitted the wearing down of the cusps of other teeth, and the consequent opening between the oral ones.

If, by any given grace and knowledge, the first permanent molar is successfully carried past the dangers of its early career, it is certainly not to be sacrificed later to any supposed purpose of making room. Careful observation will show that the opposite condition is the one created by such removal; the expanding power of the erupting force of incoming teeth is lost, to say nothing of the contraction in space following the loss of the roots to hold the right of way possessed.

Can any practitioner point to a single instance in which there was a perfect occlusion of the teeth after the removal of the first permanent molar, no matter when performed?

As soon as the first permanent molar is sufficiently through the gum to permit of any direct attention being given to it, the morsal surface should be cleansed and dried, and the sulci, without any excavating, thinly filled with a phosphate of zinc preparation. If maintained in this condition, and by proper care the deciduous teeth are made to contribute to its advantage, hopes may be strongly entertained of getting it fully up to its position in good condition. Care should be constantly exercised to see that it gets into its true occlusion, and, when needed, help given, for right here is the time to avert the future irregular conditions which will necessarily occur in the rest of the jaw if any malocclusion be permitted. Regarding the position of the cuspid tooth as the most fixed point in the jaws, no narrowing of space is to be permitted between this cuspid tooth and the first permanent molar, for after the full eruption of the second permanent molar much will be required to be done to recover any ground lost. To see the first molar in correct occlusion, and to see the cuspid tooth in correct occlusion, is largely to prevent future irregularity of the teeth.

From this condition on, the future of the first molar of the permanent set of teeth will depend upon the usual judgment, knowledge and skill of the dentist.

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# INTERSTITIAL GINGIVITIS, OR SO-CALLED PYORRHEA ALVEOLARIS.*

BY EUGENE S. TALBOT, M. D., D. D. S., CHICAGO, ILL.

(Continued from June Summary, page 435.)

## TREATMENT.

In the severer types of disease, such as tuberculosis, asthma, chronic indigestion, kidney disease, locomotor ataxia, paretic dementia, etc., very little curative effect is to be expected from treatment. Constitutional treatment is tentative since auto-intoxication will continue in most cases until death. The chief treatment of such cases will be removal of local irritation. The eliminating organs must be kept as near normal as possible. If one is diseased, it must be put to rest and the others must do its work. This cannot be very satisfactorily accomplished. The alveolar process being a transitory structure and therefore very sensitive to tissue changes, the least disturbance to the nervous system and faulty metabolism will cause absorption.

Each and every disease of the body must be treated and the organs restored to health. The normal function must be restored.

Auto-intoxication may be due to slight causes such as colds producing inflammation of the mucous membrane of the nose, throat, mouth extending to the gums, bronchitis, skin diseases, eruptions, constipation, indigestion, etc.

The condition of the blood should be ascertained. Unfortunately at the present time, there is no means by which this can be accomplished. An examination of the urine, however, is indicated as the next best method of demonstrating the condition of the system. A safe and delicate test can be accomplished by determining the alkalinity of the urine, saliva, perspiration, expectoration and dejection. The dentist is fortunate in this because he has every convenience at hand. Liebreich's methods of the use of plaster of Paris plates as elaborated by A. H.

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*Read before the Odontological Society of Western Pennsylvania.

Hoy,* of Chicago, is most admirably adapted for this purpose, since the test can be readily applied. To make the plates, mix a very thin quantity of dental plaster to the consistency of cream, care being taken to thoroughly incorporate the plaster. Take two panes of window glass, cut four pieces of wood three-sixteenths of an inch in thickness, and place one at each corner of the glass; now pour the plaster into the center, place the other plate of glass above and press it down upon the blocks of wood. By this method a very smooth surface can be obtained. Make a round cutter out of tin, the size of a 25c. piece. Remove the upper piece by sliding it off, cut out disks just before the plaster hardens. These are prepared in the follownig manner: A solution of litmus in twelve parts of water is rendered alkaline or bright blue by adding a few drops of aqua ammonia. After the disks have become perfectly hard, the smooth polished surface is to be painted with the solution, using a camel's hair brush. Two or three applications are to be made, until an even blue stain is obtained. Have a solution of chemically pure sulphuric acid, two parts in five hundred of distilled water, ready in a bottle and a bottle of distilled water. To prepare the disk for the test, scrape one-half of the dark blue surface of the plate until a slight blue surface is obtained. This requires the removal of only a slight amount, since the blue stain only penetrates a short distance. With a small brush dipped into the acid, draw it quickly over the surface exposed, giving a red appearance to the field adjoining the blue.† A bit of cotton, wound around the end of a tooth-pick wet with distilled water and applied to the two colors will produce no change, thus proving everything to be in working order. The fluid to be tested—urine, saliva, or perspiration—may now be applied. When possible, the exudate must be applied to the test as soon as it leaves the body, care being taken to apply a fixed amount each time. Apply the fluid to be examined to both the blue and red fields. When saliva is used, the mouth must be rinsed two or three times and the quantity first sucked out of the ducts must not be used. Fresh saliva direct from the glands should be used. The plates after they have been used, may be restained and used indefinitely. The dentist should make repeated tests of the secretions of healthy individuals under different conditions before studying those of diseased conditions. This method is a more delicate test than it is possible to make even with litmus paper. Litmus paper often fails to reveal reaction, which will be most obvious by this method.

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*Eating and Drinking.

†It is almost impossible to obtain a satisfactory permanent red litmus. By this method the red and blue fields stand out in bold contrast.

The secretions of the body, if found to be acid, must be placed in an amphoteric condition as soon as possible. An amphoteric condition is a reaction of the urine by which both the blue and red litmus are affected. If the red becomes blue and the blue red, it indicates that there is an amphoteric reaction. The salt giving the alkaline reaction is the trisodic phosphate; that giving the acid reaction is the monasodic phosphate. When a uniform color is produced it shows that the alkaline and acid salts are being properly excreted in proper amounts with no excess of free acid.

The normal urine specific gravity is 1018 to 1025. To determine the specific gravity the morning urine should be used. If about 1018 or lower and acid, it is due to fermentation in the small intestines. In such cases avoid yeast bread, acid fruits, wines, vinegar and all acids. If specific gravity is 1025 or more and acid, avoid meats.

Turkish baths should be used to open the pores of the skin at which time the massuer should be instructed to stimulate the liver, kidneys, skin and peripheral nerves. Drugs should be employed to stimulate the liver. If due to mineral poisons or scurvy the poison must be eliminated from the system. The system excretes forty ounces of water daily. If this amount be not taken into the system or if it be not eliminated every twenty-four hours, auto-intoxication will follow. Every drop of water taken into the stomach enters the blood. It is one of the best purifiers which we possess. From five to seven pints of pure water should be taken each day, to flush the blood and kidneys and thus cleanse the system. Certain patients, especially neurasthenics, nervous dyspeptics and many lithæmics have a repulsion to pure water. The water can be adjusted to these idiosyncrasies by the employment of lithia or other effervescent tablets. I am getting splendid results with thialion, a laxative salt of lithia. The main object is to preserve in such cases the prominent idea of the water being medicated. Besides the use of water, dietetics in dentistry involve chiefly a conservative question.

Under most conditions of sub-oxidation and inperfect elimination, as elsewhere shown, the gums are forced to assume an excretory energy to which they are unequal. As a consequence a foundation is laid for interstitial gingivitis, which, in all of its types, may seriously threaten the integrity of the teeth. Nay, more, by furnishing a culture medium for pus microbes it may threaten the general health not only through systemic infection, but also through its interference with proper gastro-intestinal digestion. Among the restrictions in diet which dental hygiene demands is, first, a restriction in foods and water containing an excess of lime salts, which produce tartar. As excess of foods containing nitrogen, when aided by an

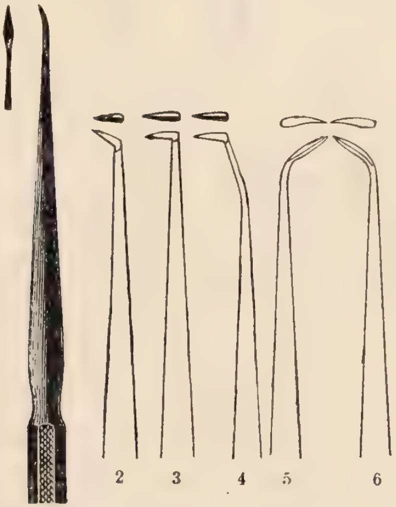

FIG. 6.

imperfect assimilation of the carbo-hydrates, tend to produce constitutional conditions like lithæmia, gout, etc., which affect tissue nutrition of the gums, these foods require restriction and adaptation to the particular case.

The local treatment should be, removal of all deposits from around and upon the teeth. For this purpose my scalers, Fig. 6, and spoon-shaped excavators, Fig. 7, are used. These deposits consist of tartar from the salivary glands at the necks of the teeth, calcic deposits upon the roots of the teeth. This deposit seems to be the absorbed alveolar process. The inflammatory state of the surrounding parts is such that the circulation is impeded, wherefore the amorphous calcic salts of the alveolar process are deposited locally.

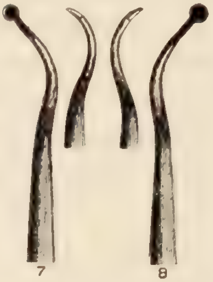

FIG. 7.

Encroachment of these salts upon the soft tissues causes irritation and inflammation. It prevents the fibrous structures from conrtacting tightly about the roots of the teeth. It causes debris and pus microbes to collect between the deposits and the inflamed tissue. The most satisfactory instruments for the removal of this deposit has been the spoon excavator. The shanks of these instruments may be bent at any angle. The spoon should be tempered very hard. They will thus keep a sharper edge. The deposit should be removed by drawing the instrument from the apex toward the crown. Inflammation is not confined to the peridental membrane. It extends throughout the alveolar process including the periosteum and mucous membrane. Hence blood letting is here indicated. The profession generally believes and states that no difference whether the disease be of local or constitutional origin, local treatment will cure. This is true to a certain extent. Blood letting (the more the better) will remove stagnation. Slight after treatment locally, will restore circulation. The tissues seemingly are restored to health. The cause, however, is still present in the system, wherefore temporary relief is only produced after the removal of all irritation about the necks and roots of the teeth aided by blood letting. Treatment as above recommended aided by change of climate, sea voyages, visits to springs with hot water baths and water drinking with plenty of rest will restore the patient to health.

The interstitial nature of this disease requires more than mere treatment of the peridental membrane. The gums, mucous membrane and alveolar process should be saturated with tincture iodine* every other day. This will reduce deep-seated inflammation throughout the alveolar process. Gum-massage brushes (hard and medium, never soft), should be used thrice daily.

I first advocated the vigorous use of the brush in 1886.† I found, however, the tooth-brushes on the market were not made properly for gum massage. After eight years of experi-

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*Since its introduction in the treatment of interstitial gingivitis at the January 26th, 1896, meeting of the Academy of Stomatology, tincture iodine has come into general use. A quarter of a century's use has satisfied me this remedy is indicated by the pathology of this disease. Finding a more astringent preparation desirable, I devised a mixture of iodine, zinc iodide and glycerine. This has been given to the profession wherever I have lectured upon the subject of interstitial gingivitis. The druggist cannot ordinarily get a clear mixture. Prof. C. N. S. Hallberg, of the University of Illinois, School of Pharmacy, after repeated efforts finally produced a clear solution, now prepared under the name of "Glycerole." This formula is as follows:

| | |
|---|---|
| Zinc iodide | 15. |
| Water | 10. |
| Iodine | 25. |
| Glycerine | 50. |

This will make about two fluid ounces. This explanation is necessary since certain teachers have given the formula without pointing out that as ordinarily made, extemporaneously, it is relatively valueless.

† *The Dental Cosmos,* page 689.

mentation, while studying the etiology, I succeeded in producing a brush, Fig. 8, that gives fairly good satisfaction. The results of this work was put in the form of a paper read at the International Medical Congress at Moscow, in 1897.

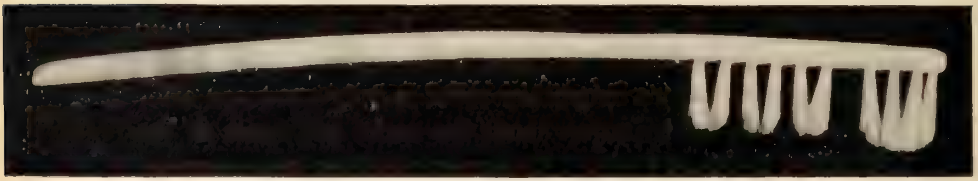

Fig. 8.

The old theory that a soft brush must be used because it made the gums bleed displayed ignorance both as to the etiology and treatment of this disease. It was found that the stiffest bristles were not too hard for the gums. When the bristles became moist the hardest softened. Two of the stiffest brushes are thus recommended, one used one day, the other the next. By so doing one has a chance to dry while the other is being used. It is impossible to reach the gums in many places with the ordinary tooth-brush. Spaces are made in which the teeth may pass so that the bristles at the point may reach the festoons between the teeth in all parts of the mouth. The vigorous use of this brush together with the iodine will restore the alveolar process to a healthy action. It is a mistaken notion that the tooth-brush causes gum recession. Gums will recede until good, hard, healthy bone structure is reached and then cease. There is always bone absorption with the inflammation.

The name "tooth-brush" is misleading. Properly made gum-massage brushes if properly used, will at the same time do all the cleansing the teeth require.

An alkaline tooth-powder should be used. Mouth-washes defeat the object for which they are intended. The patient places in the mouth the wash and because it is liquid, swashes it about. The end is not obtained because it does not reach the parts involved. Vegetol powder recommended by Dr. M. H. Fletcher, of Cincinnati, Ohio, is composed of corn meal

75 per cent, potassium chlorate 5 per cent, and sodium borate 20 per cent, menthol and saccharin q. s. This is to be rubbed into the gums with the gum-massage brush. The corn meal will cleanse the teeth. Sodium borate will neutralize the acids about the gums and teeth. Potassium chlorate will contract the tissues about the teeth. The powder is to be carried into the mouth dry. Flow of saliva will dissolve it. The tooth-powder and gum-massage brush used twice or thrice daily keeps the mouth in a healthy condition.

Pus infection or pyorrhœa alveolaris is a terminal stage of the inflammatory action. The inflammatory action may continue and exfoliation of the teeth result without pus infection. In such cases the mouth is perfectly free from pus germs. Pus germs are most frequently found in the mouth. When such is the case, infection must ensue. It has been shown that the inflammatory process must be present for the parts to become infected. Reduce the inflammatory condition and pus infection ceases. Saturating the gums with iodine aided by the use of the gum-massage brush as already suggested will restore the parts in most cases to health. It is useless to treat pus infection first. After the gums and alveolar process have been restored to health, should pus still flow from the alveolar process, deposits are still about the roots of the teeth. After these have been removed, mild antiseptic dressing such as oil of cassia, oil of cloves to the pus surface is all that is required. Tonics are sometimes indicated. A germicide mouth-wash should be used from the commencement of the treatment.

## CONCLUSIONS.

I. Pyorrhœa alveolaris is the result of a previous inflammation, interstitial gingivitis.

II. Inflammation is due to local and constitutional causes.

III. The local causes are always local irritation.

IV. The constitutional causes are 1st., those due to auto-intoxication, 2nd., those due to drug poisoning.

V. When inflammation is present, absorption of the alveolar process takes place.

VI. The deposits upon the roots of the teeth is the absorbed alveolar process.

VII. Pus infection follows the inflammation.

VIII. The treatment consists in removing the cause.

IX. If due to local irritation, that irritation must be removed.

X. If due to auto-intoxication or drug poisoning, the poison must be eliminated through the excretory organs.

XI. If the auto-intoxication is due to disease, that disease must be eradicated.

XII. Since the urine is nearly always acid in these cases, an examination of the morning urine is always indicated before undertaking treatment.

XIII. Turkish baths, massuer treatment of the liver, skin, and peripheral nerves must be resorted too.

XIV. Since the system excretes forty ounces of water daily, eight or ten glasses should be used.

XV. Blood letting of the gums should be resorted to.

XVI. After which tincture of iodine should be applied every other day.

XVII. Gum-massage brushes, hard or medium (never soft) should be used three times per day. Restoring inflamed tissues to health will thus prevent pus infection.

XVIII. Should pus infection still persist in certain localities, oil of cassia or oil of cloves applied direct to the infected surface is indicated.

XIX. Change of climate and food together with tonics may also be used.

* * *

# FLOSS AS A DENTAL PROPHYLACTIC*

BY DR. J. N. COWAN, GENESEO, N. Y.

The most vulnerable surfaces of the teeth are the surfaces that should receive the greatest prophylactic attention, and experience demonstrates that the approximal surfaces are oftenest attacked by decay. An illustration of this may be found in examining the teeth of persons who have never applied the principles of dental hygiene. Here it will be observed that fully three-fourths of the carious cavities have originated on the surfaces of the approximal contact. The records of my office, covering a period of sixteen years of active operative practice, showing that sixty-six and two-thirds per cent. of all the cavities filled have had their origin on the approximal surfaces. The enamel forming these points shown to be most frequently attacked has no inherent weakness in itself. It is just as dense, just as capable of resisting decay as the exposed surfaces. The movement of the lips, tongue and cheeks, the circulation of the saliva, together with the process of mastication, serve to dislodge misplaced matter from the labial, buccal and occlusal surfaces, but do not disturb particles of food impacted between the teeth. With these facts in mind, the conclusion is reached that if these surfaces were mechanically cleansed the percentage of approximal cavities would be materially reduced.

The tooth-brush, although an absolute necessity in the dental toilet, cannot reach these surfaces. Toothpicks of quill, wood or metal will only remove impacted matter from spaces abnormally wide; and if used between teeth in normal contact, simply wedge the deposit more firmly.

Early in my professional experience, I became convinced that floss silk, if as regularly and intelligently used as the tooth-brush, would accomplish great good in the preservation of the teeth; and in my practice I have endeavored to impress this fact on the minds of those with whom I have come in contact in my professional capacity.

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*Read before the Odontological Society of Western Pennsylvania, March, 1903.

In cases where patients have comprehended and applied my directions, the most satisfactory results have followed. *Approximal cavities have not developed,* nor has secondary decay appeared about fillings, unless there was reason to suspect the fillings were not quite as perfect in adaptation or finish as they should have been.

I will cite one striking instance of this fact. In February, 1888, a little girl of three years was placed in my dental charge with the sole injunction to spare no attention which might result in the preservation of her teeth. Both parents had had unfortunate dental experiences, the teeth remaining in their mouths being exceedingly defective and simply a patchwork of fillings, etc. They fully realized the value of the teeth they had been deprived of and the inadequacy of those they still possessed to perform the functions of mastication, and were apprehensive their daughter had inherited a tendency to an early loss of her dental organs. I thoroughly cleansed the child's teeth, filled several, and gave the mother a clear and comprehensive lecture on dental hygiene, showing her how to properly brush all the exposed surfaces, and, above all, to pass floss silk between the teeth regularly. My directions have been literally followed. Since that time, fifteen years ago, I have examined the teeth of this patient every three months, cleansing and polishing them whenever deemed necessary, with this result: the patient, who is now a young lady of eighteen, with the characteristics, face and figure of her mother, is in possession of a practically perfect set of teeth. There never has been a cavity or decay anywhere in her permanent teeth; although to forestall possible carious disintegration, I have deemed it prudent to introduce eight small fillings, six in the sulci of the molars, and two in the lingual pits of the lateral incisors. Numerous other similar instances that have come under my personal observation might be cited to establish further the value of floss as a prophylactic, but it is not necessary to mention them at his time. The average dental patient readily recognizes the necessity of systematically employing this means of preventing decay, but frequently it is difficult to use it. A spool of thread is not a convenient article to carry about in the pocket, and generally when most needed, the silk is not available. Some persons have an aversion to placing their fingers in their mouths, especially to reach the posterior teeth; and it must be admitted there is a certain inelegance in the proceeding, and, to any one not a trained dentist, the operation of passing silk between the teeth of a child, with the fingers, is a difficult one.

To overcome some of the impediments to a more general use of this material, and make its application more effective, I have devised a carrier for floss which combines convenience, simplicity, economy and an attractive appearance, and which may be operated with the same facility as an ordinary toothpick. It consists of a metal telescoping case about the size and shape of a small penknife, which prevents the operative parts and silk from being soiled while carried in the pocket, and also serves as a handle to operate the device. Upon being opened, a spring bow sustaining a taut section of floss is disclosed, which can be manipulated like a little saw, readily forcing the silk into the narrowest spaces. The silk for renewals, instead of being put up on spools, is contained in small aluminum vials, each vial holding five yards of floss, which, in addition to being waxed, is charged with thymol and formaldehyde in definite proportions; the theory being to sterilize the surfaces that the silk comes in contact with, as well as to dislodge deposits. When the floss in the vial is exhausted, the shell is slipped out, discarded, and a fresh one substituted. As only about two and one-half inches of silk are required for an operation, it will readily be seen an economy is effected by the use of this device.

The appliance is known as the "Flosspick," and the old and conservative dental supply house of Lee S. Smith & Son, of Pittsburg, has recognized enough merit and sufficient commercial possibility in it to warrant them in making their first departure from their special sphere of activity into the wider field of commerce; and if they succeed in extending the usefulness of floss silk, your essayist believes humanity in general will be benefited.

# PRESIDENT'S ADDRESS.*

### BY C. B. BRATT, D. D. S., ALLEGHENY, PA.

In these, the greatest times in manufacture and commerce known to Western Pennsylvania, where Pittsburg and vicinity after many years of quiet toil have burst forth, the world turns to look in astonishment, finding not only the greatest manufacturing city in the world, but in it and its vicinity the greatest population in the United States outside of New York and Philadelphia. In the manufacture of the principal products, such as steel, plate-glass, pig-iron, rails, window-glass, leather, iron and steel pipe, spikes and nails, we produce twenty-five per cent. to seventy-five per cent., besides the bituminous coal twenty-five per cent. and coke seventy-five per cent., of the production of the whole country. Our river and rail tonnage exceeds the river and rail tonnage of any city in the world. Our railroad tonnage alone, three times that of New York or Chicago and in excess of the combined rail tonnage of New York, Chicago and Boston. Our achievements are not, however, confined to these. We have the finest court house in the country, the best office building in the world, and as fine business blocks as are to be found anywhere, with miles of costly residences and fine parks.

Our educational and art institutions take high rank and the wealth of Pittsburg has bloomed out into libraries and art galleries and music. These are but a few of the many things we may be proud of. Paul said, "I am a citizen of no mean city," and while he did not refer to Pittsburg, nor can any one of us be accused of being an apostle, yet I think no apology is necessary if we overcome our modesty and say, we are from Pittsburg.

However, as referring to Pittsburg and Western Pennsylvania dentists, it might be well to be careful in this regard, for it is a fact that we are not keeping pace with other sections of the country in the advancement of dentistry. And I do not think we will take our place as such until we get out of our little narrow offices and take a greater interest in outside dental affairs. If you don't do anything else, come out to local meetings, then go to the State and National, and if others don't think and do as you, look around, no doubt there are others as well as yourself who only see the right way and would be glad to have you with them. As I have shown before, Pittsburg has not been waiting for the commercial world. We can't stand still. Things are done on a larger scale or in a more scientific way than they used to be. We have not time to haggle if we are going to keep up and if, as has been said by a prominent financier of New York, "nothing is too big for those Pittsburg fellows to handle," let it also be said of the Western Pennsylvania dentists, "nothing is too big or difficult for them to undertake."

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*Read before the Odontological Society of Western Pennsylvania, March, 1903.

We all have some ideas for elevating dentistry and they should be made known; instead, only the man with advanced educational ideas seems to have been heard, and he over and over as though there were only a few educated people in the world who need the service of a dentist, and a few millionaires to pay for the service.

While I do not cry down the higher dental education, I don't believe in allowing these people to have all the say, while the world is crying for better dental operations, better service, and are willing to pay for it. People feel more like paying for good operations than for all education. Success is not all in what a man has put into him, but what he gets out. The graduate dentist of to-day can tell all about the little things down to the minutest cell and its functions, the formation of the teeth in embryo, and tell how to care for the matured teeth when affected by disease; yet men are clamoring for enforced higher education, which, in my opinion, is at the sacrifice of practical application and manipulation. We should aim, as dentists, to be of the best possible service to our fellow-men, not only as to how durable an operation, but with how little pain and discomfort to the patient, as well as ourselves, for the better physical condition of the operator, the more careful can he operate. If we are to stand out in the world in dentistry, as Pittsburg does in the commercial world, we must get to work, not in our little offices, not only among a few, but among all. Bring all the reputable dentists of the community close together, see if we cannot have better meetings and more interest in our society, and the students will have better preceptors, the college better students, and the people, better and more dignified dentists. I would say, cultivate dignity for the profession. Never belittle it in speaking of it and resent any allusion to "tooth-puller," "tooth-carpenter," etc. Beware also of the man who tells you he could be higher up in other occupations than the one he is in; these people are never near the top of their own vocation. So could the laborer reach higher attainments in dentistry with the same amount of time and labor he spends in his vocation, and no doubt higher than those who belittle the profession by showing their discontent. And now in conclusion I would say, let us move forward. We are making that start to-day with the help of our friends from other cities, and I believe that from advancements in dentistry and researches being made by dentists, we will in the near future, feel glad that we had taken a deeper interest in our profession. I would advocate that we have at our earliest convenience, a permanent home or place large enough for social meetings, consultations and surgical clinics. I believe we are much in need of dental surgical clinics and the dental profession has not one special oral surgeon in this vicinity. I believe, with our large and growing membership, we could support a place of this kind much to our advantage.

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# THE NEW DENTAL LAW IN WISCONSIN.

BY C. C. CHITTENDEN, MADISON, WIS.

Bill No. 68 S. which, with some slight modifications, has just been made a law by the Wisconsin legislature, was prepared by direction of the Wisconsin State Dental Society, which is a chartered body of over thirty years' standing, and representing the best element of the dental profession in the State. Last July that society appointed a representative committee of five to draft a new dental law and present it to the legislature. This committee consisted of one representative of each of the two dental colleges in the State, one from the State Society, one from the State at large and one from the State Board of Dental Examiners. This committee met several times and made a careful study of all the State laws with a view to placing Wisconsin's required standards on a level at least with that of other States.

The object sought in the bill was, first, to establish a reasonable ideal standard in dental education which might be accepted in lieu of examination for license. Great care was taken to protect the interests of the reputable dental colleges in this State, and the bill so drawn as to make it inoperative so far as they are concerned in regard to all students regularly in their classes at the time of its passage, it providing that they should be licensed according to the standards laid down by the old law, *i e.*, on diploma and without examination, thus not only protecting the Wisconsin schools but giving them an advantage over all other schools for the next two years.

The bill was also framed with a view to more clearly expressing the powers, limitations and duties of the State Board of Examiners, as defined by the Supreme Court of Wisconsin.

The bill was introduced in the Senate early in February and referred to the Senate Committee on Education, chairman of which was Senator J. H. Stout, a well-known expert and philanthropist in the matter of the introduction of technical training in public schools.

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*Read before the Wisconsin Southern Dental Society at Janesville, May 21, 1903.

A conflicting bill was introduced, and referred to the same Committee, the advocates of which presented at different times four substitutes to their original bill, which was designated 286 S. The first object of the opposition was avowedly to secure the passage of a bill which should eliminate from the statute books the word "reputable" as applied to the Board's judgment of a dental school. Another object was to prevent any member of the Board from succeeding himself in office until five years had expired. Another object was to do away with the annual registration by which in the past the Board was enabled to keep a correct record of all dentists entitled to practice in this State, and the revenue from which largely furnished the Board the necessary funds for properly conducting its work. Another object was to prevent from being placed upon the statute books the requirement for a four-year's course for graduation from a dental college. This last was very significant, inasmuch as the standard requirements laid down by both the National Associations of Colleges and Examiners fixes the minimum requirement, beginning with the year 1903, at four years' course, of seven months each, for graduation, as a criterion of reputability of dental colleges.

So far as it was possible to judge, the chief object of the opposition to Bill 68 S. was to take from the Board of Examiners all judicial function and to make of them the simple and inefficient combination of a legal figure-head.

After the bill was published and referred, the dentists throughout the State and nearly all the members of the State Society, to the number of several hundred, appealed to the Committee on Education, either by letter or telegram, giving 68 S. their unqualified approval and urging its enactment into law. Practically two whole days, at different times, were spent by the contesting interests before the Committee on Education. The Committee was very patient, giving ample opportunity for free discussion before them of all sides and phases of the subject. The Committee, after some two months of deliberation, reported Bill 68 S., with several minor amendments which in no wise sacrificed or removed from the bill any underlying principles which it was deemed important should be retained therein, and when so modified received the entire sanction of the State Society's Committee.

There was at first considerable opposition manifested on the floor of both Senate and the House to the bill, and much effort was shown by the opponents to secure such delay as would be likely to prevent the final passage of the bill for lack of time, but as the bill became understood by the legislators this opposition gradually melted away until finally the Senate passed the bill bv unanimous consent under suspension of the rules, and on the final vote of the House there was but one dissenting voice, and the Governor of Wisconsin, the Honorable R. M. La Follette, in marked contrast to the Governor of Illinois, under very similar circumstances, has to-day given his signature of approval, so that the bill becomes, immediately on publication, the law of the State.

Thus it has been possible for the representatives of the State Dental Society, by the reasonableness of the law requested, and by the able and clever presentation of the matter to the individual members of the legislature, to thoroughly inform the representatives of the people as to the wisdom of setting up and establishing proper educational requirements and restrictions concerning the granting of licenses to men to practice dentistry upon the people of Wisconsin. I have no hesitancy in expressing the judgment that the new Wisconsin law regulating the practice of dentistry is the best, safest, most reasonable and fair to all concerned on the statute books of this or any other State or country. The text of the new law is as follows:

## THE NEW DENTAL LAW AS ENACTED BY THE LEGISLATURE OF WISCONSIN, 1903.

No. 68, S.] [Published May 26, 1903.

### CHAPTER 411.

AN ACT to amend chapter 56c, entitled, "Of the state board of dental examiners," of the statutes of 1898, being sections 1410e, 1410f, 1410g, 1410h, 1410i, and 1410j, as amended by chapter 97 of the laws of 1901.

The people of the State of Wisconsin, represented in senate and assembly, do enact as follows:

Section 1. Section 1410e of chapter 56c statutes of 1898 is hereby amended * * * so that said section when so amended shall read as follows: "Section 1410e. The state board of dental examiners, as heretofore constituted, is hereby continued. It shall consist of five practicing dentists, at least three of whom shall be members of the Wisconsin State Dental Society. The members of such board shall be appointed by the governor for the term of five years and until their successors are appointed, and any such appointee may be selected by the governor from among such persons as may be recommended to him therefor by the Wisconsin State Dental Society. Vacancies shall be filled by the governor for the unexpired portion of the term. It shall be the duty of said board to enforce the provisions of this chapter."

Section 2. Section 1410f of said chapter 56c of the Wisconsin statutes of 1898 is hereby amended * * * so that said section when so amended shall read as follows: "Section 1410f. The officers of the board shall be a president and a secretary, who shall be chosen from the members thereof in such manner and for such terms as may be provided by the by-laws. One meeting of the board shall be held in the month of June in each year and at such place as may be fixed; other meetings may be called in such manner and when and where the board may determine. A majority of the members shall constitute a quorum. The secretary's record of the proceedings of the board shall be open to public inspection at all reasonable times."

Section 3. Section 1410g of said chapter 56c of the statutes of 1898 is hereby amended * * * so that said section when so amended shall read as follows: "Section 1410g. Every person who was engaged in the practice of dentistry in this state on the thirtieth day of September, 1885, may continue such practice without incurring any of the liabilities imposed by this chapter, by annually causing his name and residence or place of business to be registered by said board, who shall keep a book for that purpose. Such registration may be made by furnishing proof of the fact of being then so engaged and paying a fee of one dollar. All persons licensed by the board shall annually register in like manner. A certified list of the persons registered in each county shall be furnished the clerk thereof by the board of examiners and the names on such list shall be registered by such clerk in a book kept for that purpose. Each registration shall expire on the thirtieth day of September following its entry. Every person who, prior to the passage and publication of this act, was duly licensed by the board to practice dentistry in this state, and who has annually registered according to law, shall be allowed to continue to practice dentistry in this state, so long as he shall conform to the requirements of said chapter 56c, as hereby amended, and said board shall have the power to revoke the license of any person who has failed or who may hereafter fail, to annually register as herein provided, if, for ninety days after notice in writing from said board of such neglect, such person shall fail to so register."

Section 4. Section 1410h of said chapter 56c of the statutes of 1898 is hereby amended * * * so that said section when so amended shall read as follows: "Section 1410h. It shall be unlawful for any person who was not on the thirtieth day of March, 1885, engaged in the practice of dentistry in this state, to commence such practice until he shall have obtained a license as hereinafter provided. The state board of dental examiners may, in its discretion, except as otherwise provided in this section, license, without examination, only a regular graduate of a duly incorporated and, in the judgment of said board, reputable dental college, in which applicant shall have pursued four full courses of lectures of at least seven months each, and which requires for admission thereto a preliminary education equivalent to that required for entrance to the junior class of an accredited high school, or a graduate from such college who, having attended the last full course in the college issuing the diploma, shall have received his dental education, prior to said last course, in a dental college having an equal standard as to courses of study and preliminary requirements. Any regular graduate of a duly incorporated and, in the judgment of the board, reputable dental college, and any person who shall have been regularly engaged in the reputable practice of dentistry consecutively for four years immediately preceding his application for examination, or any person who has served as an apprentice to a dentist, engaged in the reputable practice of dentistry, for a period of five years, who may desire a license to practice dentistry in this state, may appear before the state board of dental examiners at any regular meeting and be examined in reference to his knowledge and skill in dental surgery. If such examination shall prove satisfactory to said board, the board shall issue to such person a license to practice dentistry in this state, in accordance with the provisions of this chapter. All licenses shall be signed by the members of the board and be attested by the president and secretary. Every license shall be prima facia evidence of the right of the licensee to practice dentistry in this state, in accordance with the provisions of this chapter. Said board shall, however, license, without examination, any regular graduate of a regularly incorporated, and, in the judgment of the board, reputable dental college of this state, who shall be, at the time of the passage of this act, a regularly matriculated student, in regular and constant attendance upon the classes of such college, and who shall continue such attendance, taking the full prescribed course until his graduation."

Section 5. Section 1410i of said chapter 56c of the statutes of 1898 is hereby amended * * * so that said section when so amended shall read as follows: "Section 1410i. Any person who shall practice dentistry in this state, without being annually registered or without being licensed as herein provided, shall be punished by a fine of not less than ten dollars nor more than one hundred dollars for each and every offense; each patient treated shall be a separate offense; provided, that this chapter shall not be construed so as to prevent any physician or surgeon residing in this state, duly licensed according to the laws of this state to practice his profession therein, from extracting teeth or performing any operation upon the palate or maxiliary bones. A person shall be deemed to be engaged in the practice of dentistry within the meaning of this act who shall treat diseases or lesions of the human teeth or jaws or perform operations of any kind thereon, or manufacture or insert any artificial teeth, fixtures or appliances for the restoration, regulation or improvement of the dental organs; but nothing in this act contained shall be construed so as to prevent a bona fide student, in regular attendance upon any dental college in this state, from practicing dentistry, under the direct supervision of one of its teachers, in the regular infirmary of such college."

Section 6. Section 1410j of said chapter 56c of the Wisconsin statutes of 1898 is hereby amended * * * so that said section when so amended shall read as follows: "Section 1410j. Said board may charge each person applying for a license to practice dentistry in this state, whether such applicant be examined or not, a fee of ten dollars, which, in no case, shall be returnable, and shall charge for each annual registration one dollar. From the funds so received, all proper and reasonable expenses of the board, and each of its members, incurred in carrying out, maintaining and enforcing the provisions of this chapter, may be paid. No part of such expenses shall be paid out of the state treasury. Any excess of receipts over disbursements shall be held by the board to meet future expenses of the board and its members. The secretary of the board shall have custody of its funds and may be required to give a bond in such terms as the board may direct. An annual report of the proceedings of the board, containing an account of all moneys received and disbursed, pursuant to this chapter, shall be made to the governor on the thirtieth day of September."

Section 7. Section 1410k. There is hereby added to said chapter a section which shall be known as section 1410k, which shall read as follows: "Section 1410k. Said state board of dental examiners, shall have power to inquire into the qualifications and representations of any applicant for a license to practice dentistry, and for such purposes shall have power to send for witnesses, papers and documents and to administer oaths."

Section 8. This act shall take effect and be in force from and after its passage and publication.

Approved May 21, 1903.

# SOCIETY PROCEEDINGS

## ODONTOLOGICAL SOCIETY OF WESTERN PENNSYLVANIA.

### INTERSTITIAL GINGIVITIS.

### DISCUSSION.

Dr. Loar:—I would like to ask Dr. Talbot what he would do in the case of a sound tooth with a small gold filling in the tooth, but I am satisfied there is a live pulp? On the lingual side there is a little pus-socket and a continual flow of pus from there. It seems to be quite deep, up in the alveolar process. I have been using the same treatment, except that I have been washing it out with peroxide of hydrogen, and I have had no success at all.

Dr. Hertig:—One remark that Dr. Talbot made that impressed me very strongly with refernece to the dog. The house dog, petted and pampered and fed with foods not adapted to his dog regimen, soon begins to evince signs of disease. And you take a man or any animal, and give him stuff he should not eat and you store up conditions which bring about faulty nutrition, which is the base of all the trouble. You find the high livers, the men who eat meat and drink malt liquors to excess, more liable to disease of various sorts. And that illustrates the house dog question, and the dog that takes his exercise and follows the promptings of the spirit remains healthy to the end of his days.

Dr. Brown:—I want to say that nothing has done me so much good as these investigations of Dr. Talbot. Dr. Talbot was absolutely the first one to call attention to the fact that this condition which we have all been treating, and have heretofore been treating as pyorrhea alveolaris is not confined to the portion of the alveolar socket that to our view seems to be affected, but that it is always extending in advance of that which we can see. Therefore, to me the all-important point is, that it belongs to all of the tissues associated with the part, and is always in advance of that portion of the tissue which I was attempting to treat.

There is no difference—making allowance for the difference in tissue—between one tissue and another, and the breaking down of structures is largely brought about in the same way. We have more frequently those affecting structures of the alveouls, because of the fact that they are transitory, and, like the hair, have a tendency first to succumb to the ill-effect of our so-called civilization.

It happens that the bacteriological work in Dr. Talbot's paper has gone into the laboratory, and I have had charge, so I know of the infinite labor that has been put on that one division of this work, and that is only one of so many divisions that I am always glad to have opportunity to call attention to the very great labor that Dr. Talbot has done in this direction, and, if possible, to emphasize the importance of it by calling attention to the very practical lessons to be drawn from it. We must not forget to bear in mind that upon these theoretical investigations must be built all the practical things that we are going to do. There is no line between practical and theoretical truth, because theoretical truth must be practical, and unless it is practical it is not true.

A Member:—I would like to ask why it is that in temporary teeth, where the pulp has already died, that the roots are not absorbed?

Another Member:—I would like to ask Dr. Talbot if the use of such a strong solution of iodine, in his experience, ever sets up iodism?

Dr. Talbot:—In regard to the gentleman who spoke first, it is hard to say how I would treat that case without seeing it. He says the pulp is alive, and it is possible that it is so. I should be sure that I cleansed the tooth perfectly clean and then apply iodine and expect it to get well. I should not expect to destroy the alveolar tissue, for that is never done.

In regard to dogs, it is a fact that if you visit any dog hospital you will find they have all manner of diseases, and the point the doctor makes is a good one, that the house dog cannot void urine, but carries it about with him, and therefore he has poisoning, which is a very common thing indeed.

In regard to the absorption of roots of teeth, it is a fact that all forms of absorption are inflammatory. If you extract a tooth there is an inflammatory process set up, and it is inflammation that sets up this absorption. But in that case of the inflammatory process, where you put on the pressure to produce a lesion in regulating of moving teeth for filling, there is an inflammatory process set up and the absorption is due to that condition.

In regard to iodism. I have never seen a case of iodism. There is this point, however, the fibers of the alveolar process are thicker and more dense than of the mucous membrane, and they will stand more irritation of iodine than other mucous surfaces such as the vagina or the inner side of the mouth. It will tolerate the strength of iodine oftener and more of it than other tissues, and you will occasionally come across a patient that cannot stand that strength of iodine and you will have to use other iodine. The principal thing in treating is the thorough removal of deposits.

## FLOSS AS A DENTAL PROPHYLACTIC.

### DISCUSSION.

DR. BITTNER:—I think we can recommend the efficiency of floss silk in cleansing teeth, and I think there is no real tooth-cleansing without floss silk. I do not see how a man is going to get to the back of the mouth between the second molar and the wisdom tooth with that instrument Dr. Libbey has shown unless you can bend it at right angles. I use floss silk every night before retiring, but I believe that if you make it a rule to provide your patients with floss silk and instruct them to use it, about three-fourths of us will have to retire.

Dr. Brown:—I had one of these instruments given me by Dr. Cowan some time ago, and have had opportunity to experiment with it a little bit, and I have to say that with half the care and patience required to use floss silk between the back teeth, you can learn to use this instrument very easily. The chief advantage of it, however, is the cleanly, convenient form in which Dr. Cowan has it, so that it can be carried easily in the pocket and is still simple enough for the patient to be able to manage it himself nicely. And I believe fully in what the doctor has said, that the greatest factor in the prevention of dental caries is certainly hygienic care such as this is, and I would be almost willing to agree with him that the greatest factor is found to be floss silk.

Dr. J. A. Libbey:—All of us who have used floss silk know its good qualities, and I must say that I have never seen any means of using it, it seems to me, that will more easily introduce it into general use than this little carrier. It may be in a case where there is a very tense orbicularis oris there might be difficulty in getting between the posterior teeth, but I know that with as large an orbicularis oris as I have myself, I would not have any trouble, and I do not think the ordinary patient would have.

# SUGGESTIONS

## AN AID IN PRESSUSE ANESTHESIA.

**W. A. Brownlee, Mt. Forest, Can.**

After placing the rubber in a cavity where immediate extirpation of the pulp is intended, if a pellet of cotton is placed over the rubber, a much better pressure can be obtained, as it prevents the rubber from spreading so much under the instrument. —*Dominion.*

## BROKEN FACINGS.

**C. E. Jackson, Midlothian, Tex.**

As any one else would do, I take and fit tooth to bridge and grind if needed; then I drill holes for pins, and bevel or dovetail the holes toward each other, on the under palatal side. Then I place my tooth on the bridge with the pins in the holes and take a pair of pliers and draw or bend the pins toward each other. By that means one gets the facing to fit the bridge well. Then I dry thoroughly with hot air and pack gold-foil in the holes and over the pins. Of course I use hand pressure entirely in condensing the gold. Finish as with any other gold filling, and one has a pretty piece of work, in harmony with the bridge, and a surface that is smooth to the tongue and one on which the saliva will not act.—*Cosmos.*

## HOW TO CONTROL THE ACIDITY IN THE MOUTH.

**E. J. Wetzel.**

We have a great many patients from the age of fourteen years upward who suffer terribly from the ravages of caries.

Most dentists cure the disease by filling all decayed teeth, but neglect to make the patients attentive to the cause, which generally is in the saliva. When I began to practice, thirteen years ago, I advised my patients to wash out their mouths very often with the solution of bicarbonate of soda, and the results were pretty good. But wishing still a better success, I have some very hard lonzenges (tabloids) of bicarbonate of soda made, and advise my patients to put one quarter of a lonzenge (or tabloid) between the upper molar and the cheek before going to bed, changing alternately, one evening on the right, another evening on the left side of the mouth. In this way the bicarbonate of soda dissolves very slowly all night and neutralizes the acid saliva.—*Extract International.*

## SETTING AN INLAY.

**T. V. Smith, Philadelphia.**

After the inlay has been inserted scrape away excess cement and varnish with sandarach. Then apply paraffin, which will adhere for a much longer time to the sandarach than to the surface of inlay or tooth. Never have the rubber dam over the tooth when trying to match a shade, because when dry teeth are several shades lighter.

Excellent results may be obtained by the use of porcelain enamel paints, both by fusing on the surface of an inlay and under another modifying shade of enamel body.—*Extract International.*

## HOW TO KEEP FORCEPS STERILE.

**A. H. Merritt, New York.**

To know that your forceps are always sterile at the moment you want to use them, a very satisfactory method, is to keep them constantly immersed in a 20 per cent solution of formalin with borax in excess. This will maintain asepsis, and instruments kept in it will not oxidize. After having been used they should of course be thoroughly cleaned before they are again placed in the solution. In smaller jars kept for the purpose the hypodermic syringe and needles, matrices, nerve broaches and separating files may be kept in this solution where they are always clean and ready for immediate use. This solution should be in glass stoppered jars as it also deteriorates by exposure to the air. Absorbent cotton is also kept most satisfactorily in glass covered jars.—*Extract Items.*

## BRACKET TABLE COVER.

**A. H. Merritt, New York.**

An inexpensive and cleanly cover for the bracket table is one made of white blotting-paper. This can be cut to conform to the table and as soiled may be turned over and made to do duty for another day. I know there are those who advocate changing the cover with each patient, but I do not think this necessary, except in those cases where it may be advisable to maintain complete asepsis. This has proven in my hands more satisfactory as a cover than napkins, glass or celluloid.—*Extract Items.*

## RELIEVING PAIN AFTER SETTING A CROWN OR BRIDGE.

**H. A. Cross, Chicago.**

The pain caused by setting a crown or dental bridge may be alleviated almost instantly by the free application of campho-phenique upon the gum.—*Review.*

## MATRIX FOR CEMENT FILLINGS.

**F. W. Stephan, Chicago.**

In speaking of the matrix for the insertion of cement, the essayist speaks of coating it with a thin film of vaseline or some oil to prevent sticking of the material. This should always be done. In this connection I would call attention to the use of a matrix for this purpose made of a strip of photographic film. The strip should be held around the tooth and the cement packed into the cavity as the essayist has described, the advantage being that the film is transparent and we can see the filling as it progresses. It is also flexible, and may be burnished against the filling and leaves a smooth and polished surface with perfect margins.—*Extract Review.*

## TO PREVENT MELOTT'S METAL FROM BECOMING BRITTLE.

**J. P. Buckley, Chicago.**

If whiting (calcium carbonate) is used as a separating material in making dies and counter dies with Melotte's metal, it should be thoroughly removed before the metal is remelted. The heat in fusing breaks up the carbonate radical of the whiting and lime (calcium oxide) is formed, which, if incorporated in the alloy, makes it brittle. The lime can be chemically and easily removed by dipping the ingot in dilute hydrochloric acid (10 per cent.). This will convert the lime into soluble calcium chloride and the soluble salt can be thoroughly washed off with water.—*Review.*

## A METHOD OF SERRATING PLUGGER POINTS.

**R. L. Graber, Peoria, Ill.**

Select a metal file with serrations as fine as the plugger point is desired when finished. Place the file in a vise and secure it in such a way that free access can be gained to the portion at the posterior part, near the handle, where the cuts cease to cross, and in consequence parallel serrations are presented. Prepare a plugger point the desired size and shape, adjust it in a pin vise and with the end of the plugger placed firmly against the file at the point indicated it can be worked back and forth in the direction of the cut until the plugger presents serrations as deep as required. Repeat at right angle if cross-cut serrations are desired. It may be necessary to draw the temper from the plugger point to gain the best results, but this can be restored with little trouble in the usual way.

By this method plugger points which are adapted to the manipualtion of fibre golds can be very easily formed after a little experience and if care is taken to select the proper file there will be no difficulty. To prove this compare other points under a lense.—*Review.*

## DIFFERENT GRADES OF GUTTA-PERCHA.

**B. L. Thorpe, St. Louis.**

The different grades of dental gutta-percha placed on the market by the dealers become plastic at 190 degrees, 212 degrees and 220 degrees F. After the cavity is prepared and dried, coat the entire cavity with a varnish of Pinus Sylvestrus (Scotch fir) resin 2 dr. dissolved in absolute alcohol 1 dr.; after a few seconds place the gutta-percha, warmed on a porcelain slab or heated by steam or dry heat—*gutta-percha never should be heated by direct contact with the flame*—piece by piece, until the cavity is half filled, then finished with one large piece. When this has cooled, trim the edges with a sharp, warm instrument (such as a flexible spatula designed by myself and placed on the market by the S. S. White Dental Mfg. Co.), burnish and wipe filling with pledget of cotton wet in chloroform, which removes rough edges. The longer gutta-percha remains in a cavity the harder it apparently becomes.—*Extract Dental Era.*

## REPAIRING A RUBBER DENTURE.

**J. P. Buckley, Chicago.**

When one or two teeth are broken they can be easily and quickly replaced in the following manner: Select teeth that will fit perfectly in their proper position on the plate. Cut a cavity, dovetailed in shape, in the rubber back of the pins, being careful not to cut through the plate. Fuse Melotte's alloy and drop small pieces on an asbestos pad. Hold the plate firmly with the left hand, the index finger pressing against the tooth or teeth to be secured. Place the small pieces of Melotte's alloy in the cavity and with a hot wax spatula they can be partially fused and pressed around pins of teeth and into the cavity. This method is quicker and better than amalgam for the same purpose and I have used it several times with much satisfaction where the patient was unable to leave the plate long enough to repair by vulcanizing.—*Review.*

## A SATISFACTORY MUMMIFYING PASTE.

**J. G. Harper, St. Louis.**

A satisfactory mummifying paste has been produced since the advent of formaldehyde. Those who tried the alum formula were not satisfied on account of the lack of success and want of stability of the compound. Now we have a paste that keeps its consistency for an indefinite time, and the results are all that could be desired. The formula is:

Ex. Paraformaldehyde .......
Thymol ..................aa. ʒj.
Zinc oxid ................. ʒij.
Glycerine q. s. to make a stiff paste.

The paste should be of such a consistency that quite a large quantity adheres to the broach when dipped into the bottle; then it can be carried to the mouth of the canal and coaxed to place by a pumping motion; where admissible insert a gutta-percha spindle. I believe it a good practice to use the paste in all root canals, as there may be small ramifications of pulp that we are unable to ever detect except in sections of extracted teeth. The paste makes an excellent antiseptic application when used in canals from which a putrescent pulp has been removed.

Recently I have been using the paste to coat the walls of cavities to be filled with amalgam. Two objects were in view in doing so—first, to render inert any germs in the dentine; second, to prevent discoloration of the tooth by means of the oxid of zinc in the paste, which forms a lining to the cavity. I do not hesitate to use the paste on the remainder of the pulp after the removal of the bulbous part. Even if the pulp is not all dead, the paste will settle that question, as it will kill and mummify to the apex. There may be a little pain, but it is of short duration. In such cases always use formaldehyde (44%) as a bath, then apply the paste.

In conclusion, I wish to thank Dr. Prinz for giving us such an excellent formula for a mummifying paste. Those who have not tried it should hasten to do so, for I am sure they will be pleased and gratified at the results attained.—*Dental Era.*

## THE SETTING OF DAVIS CROWNS.

**J. G. Harper, St. Louis.**

The Davis crown has the advantage of having the pin separate from the crown, making its adaption to the root much easier than in those teeth where the pin is baked in place. The pin is of good size, and rigid. At first some trouble was experienced on account of the pin becoming loose in a short time, either in the crown or the root. Recently, having adopted the following method, the trouble has disappeared. The crown and pin are properly fitted in place. First cement the pin in the crown, allow the cement to harden, remove any surplus, and then place base-plate gutta-percha around the pin and over the base of the tooth. To insure adhesion of the gutta-percha to the pin and base of crown, they should be moistened with eucalyptol, the gutta-percha is heated and pressed to place, removed, trimmed, heated again, forced to place, removed and trimmed as often as is essential to get a nice fit and have all surplus gutta-percha nicely trimmed away.

The pin-hole in the root should be sufficiently moistened with water or saliva to prevent the gutta-percha from sticking while doing the fitting. Now dry out the pin-hole and fill the same with thinly mixed cement, heat the gutta-percha and force the tooth to place and hold fast until the cement has set. The gutta-percha has a certain amount of elasticity that is an advantage; then there is also a gutta-percha disk between root and tooth that will not disintegrate; it also insures a good joint.—*Dental Era.*

# NEW PUBLICATIONS

THE MYCOLOGY OF THE MOUTH: A TEXT BOOK OF ORAL BACTERIA. By Kenneth Weldon Goadby, D. P. H., Camb., L. R. C. P., M.R.C.S., L. D. S., Eng. Longmans, Green & Co., London and New York. Co., Pub., 1903. Price, $1.25, net.

This work is a most excellent and sensible treatise on the subject. The writer says he prefers the term "mycology" to "bacteriology," because the micro-organisms of the mouth include species belonging to higher orders than the bacteria or schizomycetes. The book contains 240 pages, and the subject-matter is treated in a progressive manner. Chapter I is devoted to the classification and morphology of bacteria. Chapter II, biology. Chapter III, sterilization. Chapters IV and V, methods of observing bacteria, microscopical methods, and methods of cultivation. Chapter VI, susceptibility and immunity. Chapter VII, pathogenic bacteria in dental caries. Chapter VIII, bacteria in dental caries. Chapter IX, bacteria in tooth-pulps. Chapter X, bacteria in dento-alveolar abscesses. Chapter XI, bacteria in pyorrhea alveolaris. Chapter XII, bacteria only known to occur in the mouth. Chapter XIII, saprophytic bacteria of the mouth not described in previous sections. Appendix.

The chapter on biology of bacteria is concisely written, yet contains enough information to thoroughly acquaint the student with this important subject. The chapters on sterilization and disinfection and methods of observing bacteria, contain all the information necessary for the the technic work in bacteriology. The pathogenic bacteria of the mouth are treated at length, for they are of great importance in relation to pathological conditions of the mouth and to general disease.

Fermentation and dental caries receive careful consideration, forming an instructive chapter. In treating the bacteria found only in the mouth, the author describes two forms not mentioned by Miller in his work.

In writing the book the author has endeavored to present the subjects in an unbiased manner, giving the findings and opinions of other bacteriologists as well as his own.

Mr. Goadby has made a special study of bacteriology and mouth bacteria for many years and is thoroughly conversant with everything that has been presented, and has himself done much original search work. The text shows his competency to write a valuable treatise, and the arrangement and order of the subjects treated make the work a most excellent text-book for dental college use. And not this alone, for there is much information that is valuable to the regular practitioner as well.

SUCCESS IN DENTAL PRACTICE: A FEW SUGGESTIONS RELATIVE TO THE MOST APPROVED METHODS OF CONDUCTING A PRACTICE. By C. N. Johnson, M. A., L. D. S., D. D. S., Professor of Operative Dentistry in Chicago Dental College, Editor *Dental Review*, and author of "Principles and Practice of Filling Teeth." Philadelphia: J. B. Lippincott Co., Pub., 1903. Price, $1.25, net.

It gives us pleasure to make a notice of this little book, for it contains so many valuable suggestions to practitioners of dentistry. Dr. Johnson has a happy faculty of making everything readable that he writes, and this is no exception to the rule. How to be most successful in practice, not from simply a pecuniary standpoint but from every point of view, is a question not easily solved, but in this little book Dr. Johnson certainly paves the way thoroughly for good building. He first speaks of the arrangement of an office, then about winning patronage, location, extending acquaintance, managing patients, records and bookkeeping, appointments and sittings, giving credit, collecting accounts, paying bills, fees, employing an assistant, economy in purchase and in avoiding waste, bank account and investments, professional relationship and citizenship.

This book, filled as it is with so much information of vital importance to all dentists who wish the greatest success, is one that should be read by every dental practitioner and kept in a convenient place for ready and frequent reference.

# CORRESPONDENCE

## PLATE REPAIR.

In the May number of The Summary Dr. L. W. Jordon, of Bingham, Maine, asks for a method of fastening a central, lateral or cuspid onto a plate without vulcanizing and still have it as strong as though the process of vulcanization had been carried out.

I have used the following method for some time, and have yet to see a case to make one regret its use. The method, however, is not original with me.

On a wax spatula melt a small portion of Melotte's (or other low-fusing) metal, and while still warm, convey to the place formerly occupied by the tooth, having first burred out a small undercut in the vulcanite. Press tooth to place and hold firmly for a moment.

If desired to change position of tooth, slightly warm and again hold in place until metal cools.

H. O. Barnes.

Lowell, Mich.,

## CHECKING FACINGS IN SOLDERING.

After reading the article entitled "Bridge-Work" by Dr. J. G. Fife, of Dallas, Tex., in the May Summary, it appeared to me that the doctor laid particular stress upon the clearness or non-checked appearance of facings after soldering.

If so, the most important precaution has been omitted, I believe, namely: drying and heating the investment slowly and thoroughly before throwing the flame on the case to solder.

I believe that most of the checked facings are due to this carelessness.

B. W. Lindemann.

Milwaukee, Wis.

# SOCIETY

## NATIONAL DENTAL ASSOCIATION.

The National Dental Association meets in Asheville, N. C., Tuesday, July 28.

Preparations are being made for one of the best meetings in the history of the Association. The Section officers are preparing a program which, from a scientific and practical standpoint, will be difficult to excel. The clinics will be made a special feature.

All dentists interested in the advancement of the profession should attend this meeting.

All State and local societies should elect delegates who will be sure to attend the National meeting, they being entitled to one delegate for every six of their members.

The usual railroad rates will be had on all roads in the United States, and part of Canada—one fare and a third, on the certificate plan.

L. G. Noel, *President.*

A. H. Peck, *Rec. Secretary.*

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## NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners will meet July 24, 1903, at Asheville, N. C. The meetings will be held at The Battery Park Hotel, beginning at 10 a. m., and last three days.

Compliance with the following resolution passed at Niagara Falls in 1902 is requested:

"*Resolved,* That each Board of Examiners, members of the National Association of Dental Examiners, furnish and present through its representatives at the annual meeting of 1903, the records and votes of candidates for examination, graduates from recognized dental colleges, who have in their examination during the year, and whose marks indicate a lack of proper dental education."

It is important that every State be represented at the meeting, as a number of questions of importance to the dental profession must be settled.

J. P. Root, *Secretary.*

## COMMENCEMENTS.

College of Dentistry, University of California, May 25; graduates, 16.

Dental Department, University of Denver, May 18; graduates, 19.

Dental Department, Vanderbilt University, May 6; graduates, 16.

Louisville College of Dentistry, May 7; graduates, 65.

Dental Department, Medico-Chirurgical College, Philadelphia, May 22; graduates, 24.

New York College of Dentistry, May 18; graduates, 54.

Chicago College of Dental Surgery, April 28; graduates, 160.

## MEETING OF THE WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting will be held in Superior, Wisconsin, July 20, 9 a. m. All applications for examination should be in by July 15. Candidates must be graduates from a recognized college or a regular practitioner of dentistry for four years, or an apprentice to a reputable dentist for five years. Beside the regular written examination the candidate will be required to insert a contour gold filling, furnishing all instruments, and materials.

J. J. Wright, D. D. S.,
Milwaukee, Wis. *Secretary.*

# AFTERMATH

## PERSONAL AND MISCELLANY.

Dentist Wanted.—Battle Lake, Minn., with 600 residents, advertises for "a dentist to fill a long-felt want and pull a few molars."

New Member of Iowa Dental Examining Board.—Governor Cummins has appointed Dr. E. D. Brower, Le Mars, Iowa, a member of the State Dental Examining Board to succeed Dr. E. P. Webber whose time had expired.

An Unusual Occurrence.—An Indianapolis dentist, by the name of North, has become insane over religion. He carried a bible from which he read and preached on the streets. He imagined that he was one of the Apostles.

Died.—Dr. Ernest Winans, a popular dentist of Franklin, N. Y., died May 7, after a brief illness, of diabetis.

A New Dean.—Dr. B. J. Cigrand, Chicago, has been elected Dean of the Dental Department, University of Illinois, to succeed Dr. A. H. Peck, who has resigned.

New Dental Law For Illinois Killed.—On May 26, Governor Yates, of Illinois, vetoed the new dental bill that passed the legislature. The obnoxious provision related to "government by societies" as the governor terms it. The measure provided that three of the five members of a board of dental examiners should be appointed from a list of nominations supplied by the state dental society, which is said to include in its membership only 15 per cent. of the practicing dentists of the state. In commenting on the action of Governor Yates, the editor of *The Digest* says: "The question is, shall the boards governing professional affairs and men throughout the state be controlled by the professions themselves or by gang politicians? In the matter of state dental examining boards, Illinois in the past has been notorious for crooked practices, bribery, etc., and it will take years of right living to remove the stigma cast upon the fair name of dentistry and dentists in Illinois. Probably the prejudice against American dental graduates will never be removed in foreign countries, especially in Germany. This would not be the case if in the past the men who were to serve upon the state boards had been selected at least by the state dental society, instead of being the porteges of ward heelers or higher gangsters."

Expelled From Dental Society.—The Jefferson County Dental Society, New York State, has just expelled a member for quoting prices in the advertising matter that he sent out.

Small Damages For Lost Teeth.—Two men had an altercation in Minneapolis, and one knocked out two of his opponent's teeth. Suit was brought for $1,000 a tooth, but the jury decided that those teeth were worth about $18.75 each, and brought in a verdict for $37.50.

Dental Societies Entertain.—The Toledo, Ohio, Dental Society entertained the Faculty of the Dental Department, University of Michigan, and a delegation of Fremont dentists, on May 9. The Cleveland City Dental Society entertained the members of the Buffalo, N. Y., Dental Society at Cleveland, June 3.

Northern Ohio Dental Society elected officers as follows: President, Dr. W. H. Fowler, Painesville; vice-president, Dr. W. T. Jackman, Cleveland; corresponding secretary, Dr. W. G. Ebersoll, Cleveland; recording secretary, Dr. C. D. Peck, Sandusky; treasurer, Dr. D. A. Allen, Toledo.

Believes In The Use Of The Tooth-Brush.—Booker T. Washington, in a recent lecture said: "I believe in the gospel of the tooth-brush. It has been our principle at Tuskegee to legislate that whatever a student has or has not in his equipment he mus t have a tooth-brush. When we find that a student has replaced his first one by his own volition we are confident of that student's future."

Teeth Stolen.—The dental office of Dr. Olmstead, Ilion, N. Y., was entered by thieves May 4, and many sets of teeth were stolen.

Cutting A Tooth At The Age Of 87.—Mrs. Blanchard, age 87 years, living at Merengo, Ill., is "cutting teeth."

The Dentist's Mistake.—She: "The milliner told me that she had been down to the dentist's to have a nerve killed." He: "Well, from the prices she asks for hats, I should say the dentist must have killed the wrong one."—*Yonkers Statesman.*

Pushing His Business.—"Say, Parker, why does that dentist go around telling strange funny stories?" "Why, he has an eye for business. When they laugh he notices their teeth and if they need fixing up he passes over a card."—*St. Paul Trade.*

Dental Commissioners Of Connecticut.—Governor Chamberlain, of Connecticut, on March 19, reappointed E. W. Pratt, Hartford; W. H. Loomis, Rockville; J. T. Barker, Wallingford; W. E. Hyde, Danielson; and Horace Bascom, New Haven, as members of the Dental Commission.

W. E. Hyde offered his resignation, and Dr. T. S. Rust, Meriden, was appointed. Dr. Bascom has also resigned, his resignation to take effect July 1.

California State Dental Board at its recent examination failed twenty-two out of seventy-six applicants for license.

The Way They Do It In The Philippines.—"I notice," said the curious individual, "that your advertisement states that 'there is no charge for administering gas when other work is done.'" "That's what it says," replied the dentist. "Well, I've lost several nights' sleep trying to tell what that means. In the first place, what would one want with gas when other work is done? Generally he wants it before and while the work is doing. Or, if, on the other hand, it means that when the administration of gas is the only work required, no charge is made, I am no less puzzled. Why should any one but a dope-fiend seek a dental office merely to take gas, and why shouldn't he be charged for it? And it—" But by this time the dentist had his revolver ready and he made haste to remark: "My dear man, you have struck a snag. I don't like your nerve. If you don't extract yourself in about a minute I will give you a soft-filling that will also constitute a painless removal. Drill now, or—" But the man was gone.—*Manila, P. I., Freedom.*

Missouri State Society Officers.—President, J. H. Kennerly, St. Louis; first vice-president, F. W. Franklin, Kansas City; second vice-president, F. H. Achepohl, St. Charles; recording secretary, H. H. Sullivan; corresponding secretary, Sam T. Bassett, Kansas City; treasurer, J. T. Fry, Moberly;

Alabama Dental Association officers for 1903 elected are: W. J. Reynolds, of Slema, president; H. C. Hassell, of Tuscaloosa, first vice-president; N. M. Vann, of Atlanta, second vice-president; L. A. Crumley, of Birmingham, second vice-president; W. B. Fulton, of Birmingham, treasurer; W. E. Procter, of Sheffield, on board of examiners. The convention will meet at Anniston next year on the second Tuesday in May.

New York State Dental Society, May 14, elected as its new officers: President, R. H. H. Hofheinz, Rochester; vice-president, W. J. Turner, Brooklyn; secretary, W. A. White, Phelps; treasurer, C. W. Stainton, Buffalo; and correspondent, E. Hillyer, Brooklyn.

Oklahoma Dental Society.—Officers elected May 15: F. H. Coulter, Oklahoma City, president; R. H. Pendleton, Norman, vice-president; Theodore P. Bringhurst, Shawnee, secretary and treasurer.

Killed.—W. P. Fundenberg, Pittsburg, son of W. H. Fundenberg, Dean of the Pittsburg Dental College, was killed recently, by a Pennsylvania train.

Died.—Dr. N. M. Thornton, Abbeville, Ala., died May 17, age 60.

Old Practitioner Dead.—Dr. J. S. Chandler, Sandusky, O., one of the oldest practitioners in the state, died May 5.

New Member Of New Jersey Board.—Dr. C. S. Stockton, Newark, has been appointed a member of the New Jersey Examining Board, to fill the vacancy caused by resignation of Dr. J. A. Osmun.

Married.—Dr. C. B. Hayner, Fowlerville, Mich., was married May 14, to Miss Mabel E. Cooper.

Dr. J. P. Buckley, Chicago, has accepted the chair of Materia Medica, Pharmacology and Therapeutics in the Dental Department, University of Illinois.

Dr. Thomas Fillebrown, Boston, has contributed a series of instructive articles on the physiological side of vocalism, to *The Etude*.

Eastern Indiana Dental Association elected officers as follows: President, Dr. F. S. Anderson, of Richmond; vice-president, W. B. Binfield, of Greenfield; secretary-treasurer, Dr. H. F. Hussey, of Richmond.

Central Michigan Dental Association.—The officers elected were as follows: President, Dr. J. H. Armstrong, Belding; vice-president, Dr. P. F. Hines, Lake Odessa; secretary, Dr. G. F. Smith, Belding; treasurer, Dr. S. A. Horning, Portland; executive committtee, Dr. C. E. Whitmore, Portland; Dr. J. J. Green, Ionia, and Dr. J. P. Taylor, Carson City. The next meeting will be held at Belding.

Nebraska State Dental Society, at its recent meeting, elected as officers: President, H. O. Shannon, of Lincoln; vice-president, A. Gaiser, of Friend; secretary, W. R. Clark, of Syracuse; corresponding secretary, H. R. Hatfield, of York; treasurer, H. T. King, of Fremont; member of board of censors, W. R. Smith, of Pawnee City.

Kansas State Dental Association.—Officers elected: T. I. Hatfield, of Marysville, president; J. W. O'Brien, of Lawrence, Kas., first vice-president; George Losh, Lyndon, second vice-president; George A. Easterly, of Lawrence, secretary; Henry Fessenden, of Ottawa, treasurer; Dr. Kelby, of Atchison, member of the board of censors; S. J. Renz, of Leavenworth, superintendent of clinics. The Association will meet next year in Topeka.

Iowa State Dental Society Officers: W. R. Clark, Clear Lake, president; A. Solvsberg, Sioux City, vice-president; C. W. Bruner, Toledo, secretary; T. A. Gormly, Mt. Vernon, Treasurer.

Illinois State Dental Society.—At the 39th annual meeting of the Illinois State Dental Society, held in Bloomington, May 12 to 14, the following officers were elected: President, F. H. McIntosh, Bloomington; vice-president, C. C. Corbett, Edwardsville; secretary, Hart J. Goslee, Chicago; treasurer, C. N. Johnson, Chicago; executive committee, F. B. Noyes, Chicago; supervisor of clinics, C. E. Bentley, Chicago; committee on science and literature, G. V. Black, Chicago; committee on art and invention, J. H. Prothero, Chicago; librarian, J. T. Cummins, Metropolis City; members of executive council, three years, A. H. Peck, Chicago; G. W. Dittmar, Chicago; and W. A. Johnston, Peoria. The 40th annual meeting will be held in Peoria the second Tuesday in May, 1904.

ORGANIZATION OF THE INTERNATIONAL DENTAL CONGRESS FOR 1904.—The Director of Congresses, World's Fair, has instructed the committee appointed by the National Dental Association, to go ahead and organize the Fourth International Dental Congress, to be held in Saint Louis, Mo., in 1904. The members of the dental profession generally should give their generous support and assist the committee in every way possible to make this one of the best, if not the greatest dental meeting ever held.

RECENT PATENTS OF INTEREST TO DENTISTS—

718561.—Attachment for dental engines, Claude R. Bashford, Healdsburg, Cal.

718401—Dental finishing-strip package, Jacob A. Thomas, Hanover, Pa.

718614.—Artificial tooth-crown, Hermann Friedland, Mayence, Germany.

718772.—Dental napkin-holder, Henry A. King, New York, N. Y.

719312.—Dental disk-holder, Edward J. Douhet, Cleveland, Ohio.

719017.—Toothpick, Albin Lenhardtson, Stockholm, Sweden.

719834.—Dental matrix retainer, John Mills, Brantford, Canada.

719964.—Artificial tooth, Walter F. Wheeler, Spencer, Mass.

719928.—Manufacture of dental crowns, Evart V. Williams, Argyle, Wis.

720394.—Dental Charcoal point, Louis Arndt, Jersey City, N. J.

720105.—Dental impression cup, George A. Brouillet, Boston, Mass.

725033.—Dental chair, Isaac N. Brigham, Cleveland, Ohio.

725081.—Toothpick, James E. Hills, New York, N. Y.

725506.—Dental plate, Samuel G. Supplee, New York, N. Y.

726644.—Seamless gold crown for teeth, John R. Comins, Syracuse, N. Y.

726771.—Core for casting molds for tooth caps, Warren M. Sharp, Binghamton, N. Y.

726772.—Device for drawing metal tooth caps, Warren M. Sharp, Binghamton, N. Y.

726381.—Dental bridge-work, Victor von Unruh, New York, N. Y.

726895.—Dental mouth-mirror attachment, DeWitt C. Franklin, Maysviille, Ky.

726956.—Artificial tooth, George A. Louque, New Orleann, La.

727483.—Dental mouth-mirror, Christopher S. Street, Philadelphia, Pa.

Copies of the above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

# DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

## INSTRUMENTS.

BY J. A. WATLING, D. D. S., YPSILANTI, MICH.

Professor of Operative Dentistry, Dental College, University of Michigan.

You have made me promise to write something about instruments but why you selected that subject I cannot imagine unless you thought that I knew more about it than about anything else. I have had quite an experience, not only in the use of instruments but in making and devising new ones, and I have observed that their value is largely dependent upon habit, in other words, a man is very apt to think those instruments to which he is accustomed the best. This may be illustrated by a little story told of a Yankee who used a stone to drive nails in shingling. He had once been persuaded to try a hammer, but having awkwardly pounded his fingers, he cried out triumphantly, "Give me my stun!"

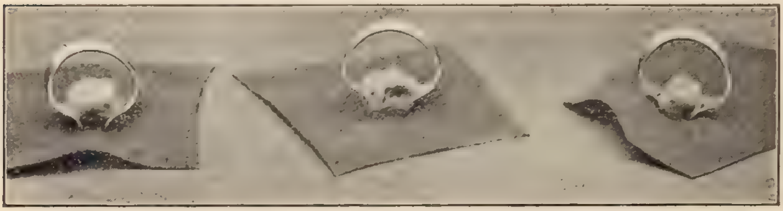
A few years ago I remember being in a dental office where I found a dentist using only four pluggers for filling teeth with gold; a double-ended burnisher was all he wanted for the plastics.

I have always maintained in my own practice and in my teaching, that a large assortment of the best quality was absolutely necessary for good results. Students should be supplied with all of the latest and best instruments obtainable, for in their student days they are forming life habits, and if they do not have them then, if they manage to slip along without them when they are in a position to learn to use them, they will in all probability continue to do so always. The right thing, for the right place, at the right time, is ever important.

Now, my dear sir, I would like to call your attention, first, to the attitude of some manufacturers toward their patterns, and afterwards, to a few new things. It seems a very difficult thing for an instrument maker to follow a pattern closely for any length of time; at least such has been my unfortunate experience for many years past. I have given my pattern exactly as I wished the instrument made, and in a short time have found it badly altered, in fact, if one may so speak, quite degenerate. This may occur through carelessness, which I am charitable enough to hope is the usual reason; or, it may be that the instrument maker thinks he knows more of the use of the instrument than the designer and that he can improve upon his work.

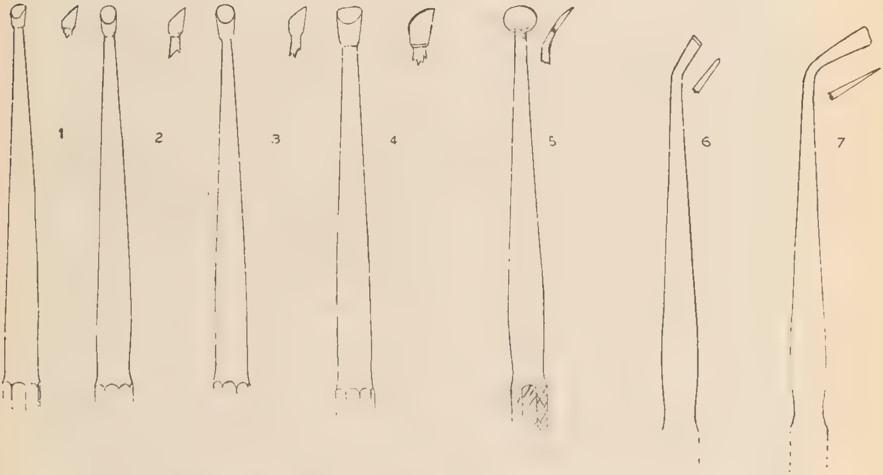
### A NEW CLAMP.

The first new thing for which I ask your attention is a clamp, that will stay on very short and irregular second and third molar teeth, where no other clamp will stay. I have had trouble in putting the rubber on very short third molars and I know others have the same trouble. Such teeth often have to be filled before the gum is fairly off the crown, and most of the clamps that are on the market have a tendency to slip up and off the crown instead of down and on the neck. For a long time I had an idea of a clamp, that could be made to slip down; finally, one day, I had a short third molar that was not fully out of the gum. I stopped, and made a clamp then and there that did *stay*, and was enabled to make a good gold filling in the dry.



Above cut will give a better idea of it than any description I can write. At first sight it may seem to some that the bow is large; after using it, however, in my own practice and in college clinics for hundreds of cases in the past year, I find that it gives universal satisfaction and accomplishes what no other clamp does. In applying the clamp to the tooth, the rubber should be placed on the clamp before it is put on the tooth; doing this, or placing the clamp on the tooth and then drawing the rubber over the bow of the clamp as I have sometimes done, gives best results. If the bow is oiled a little, it will slip over much more easily. The rubber should be heavy, for, as it is not possible to get the rubber under the points of the clamp, it should be thick enough to draw tightly around the tooth. In some cases it may be necessary to pack pieces of spunk around the tooth and clamp to dam up places exposed to moisture. If these directions are carefully complied with, there will be no trouble in excluding moisture nor danger of the clamp coming off.

I have also a set of gouges, four in number, that are not as much in general use as they ought to be. The accompanying illustration will give you an idea of their form. Fig. 1-2-3-4.



After becoming accustomed to their use, you will find them almost invaluable, as bur and time-savers. They may be used to great advantage in opening occlusial cavities of medium and large size on upper molar teeth; or, in opening up and cutting down the occlusal surfaces of approximal cavities on upper molars and bicuspids. In using them, place the cutting-edge of the instrument just a little back of the edge of decay and with a firm and slightly rotary pressure cut down the overhanging walls of enamel. Thus, working around the cavity until all the overhanging walls are cut down, a process quickly accomplished with a large spoon instrument, you will find that the softer decay can be very readily removed.

Another instrument that I have found useful is a large spoon-shaped excavator. Fig. 5.

It may, perhaps, appear too large to be of actual service, but I assure you that it is not. It will be found quite serviceable in the removal of decay from large cavities, and it is very useful in trimming off the surplus of all plastic fillings. It may also be used to advantage in removing tartar from the lingual surfaces of incisor teeth. In short, it is an all around instrument and a valuable addition to a dental outfit.

All instruments should be kept well sharpened. No excavator should be used a second time without sharpening. I use what is known as a hatchet excavator a great deal, but have had frequent trouble in getting them well made. The blade should be a little wider at the cutting-edge than at the neck, tapered and thin like a knife-blade. Most of those found on the market are thick and blunt on the cutting-edge, more like a cold-chisel, and they have the further appearance of having been long in use, worn out and ready to be repointed. It is no wonder to me that many of the younger members of the profession do not understand the use of excavators. The following illustrations show the difference between excavators made in the right and wrong way. See Fig. 6-7.

Another appliance, without a name, I have found to be of great value in filling teeth that are a little loose, or that have become sore after a protracted operation from the continual stroke of the mallet. The shock of the blow is broken by the use of a heavy weight held firmly on the opposite side of the tooth to be filled. It consists of a piece of lead weighing twelve ounces, four and one-half inches in length, and bulbous in form, the large end being one and one-fourth inches in diameter and tapering down to one-fourth inch at the small end, the whole excepting the small end being covered with kid, to make it clean in handling and using. See Fig. 8. It should be held in the left hand, the bulbous end in the palm and the small end against the point of the tooth opposite the filling.

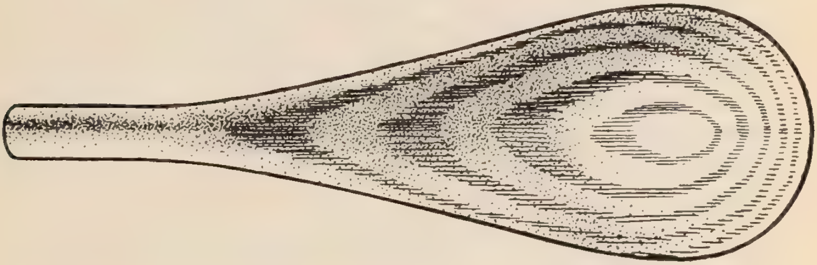


FIG. 8.

This breaks the blow of the mallet and the patient is consequently relieved from the unpleasant shock accompanying its continual stroke.

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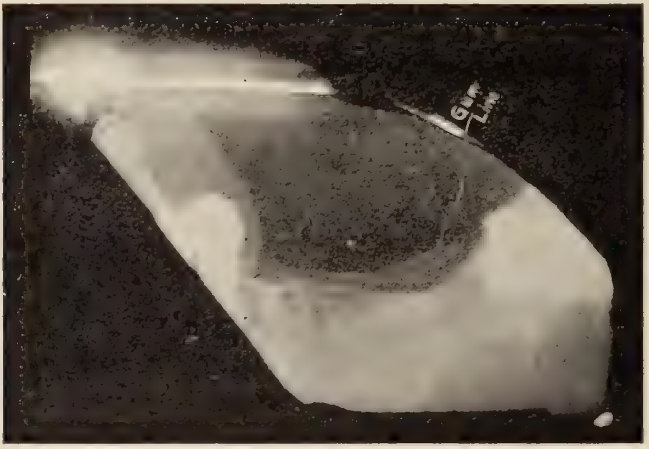
## MISPLACED LOWER THIRD MOLAR.

BY THOMAS L. GILMER, M. D., D. D. S., CHICAGO.

Professor of Oral Surgery, Northwestern University Dental School.

Mrs. F, aged 54, consulted me early in September, 1902, regarding pain in left side of the face and left ear, from which she had suffered periodically for several years. Occasionally during the periods of pain, she had a slight swelling in the vicinity of the angle of the jaw, accompanied by a general febril condition, but with no history of a discharge of pus, or sinus within the mouth or on the face. At the time of these swellings the pain in the ear was more severe. All of the teeth posterior to the first bicuspid on this side of the mouth, which had been erupted, had been removed several years previously, it being supposed that they might be a contributing cause to the trouble, but no benefit followed their removal. Only a short time previous to her consulting me, she had the first bicuspid removed, with a like unsatisfactory result.

From a careful examination I discovered no abnormality or condition which indicated a cause for the pain. The history of the occasional slight swelling at the angle of the jaw was the only clue obtainable upon which to construct a diagnosis. This, however, did cause me to suspect an impacted or misplaced third molar. The patient could not certainly remember whether she had had two or three molars removed. In order to prove or disprove the presence of a tooth as a cause of the condition I resorted to the X-ray, exposing a film inside of the mouth, as far back as possible, with the result indicated in the accompanying cut.



It will be observed that within the ramus, there lies horizontally with the body of the bone, with its occlusal surface presenting anteriorly a full-sized third molar tooth. The entire tooth, with the exception of one cusp, is contained within the ramus, and there is no sinus leading from this cusp through the soft tissues.

Believing the misplaced tooth the cause of the pain, its removal was determined upon. To effect this the patient was anaesthetized, and an incision made through the soft tissues down to the bone, extending from the anterior angle of the jaw upward one inch, approximately. The bone now being reached, lateral dissections exposed it, and the cusp of the buried tooth came into view. That portion of the bone remaining over the occlusal surface of the tooth was removed with burs and chisels.

Should I now have been able to have grasped the tooth with an extracting forcep, the force necessary for its dislodgment would have caused a fracture of the ramus, as the tooth occupied the greater portion of the thickness and breadth of the bone. To secure the removal of the tooth, and at the same time not endanger the bone, with a drill in the engine I cut away the bone immediately surrounding the tooth and its root, loosening it, when it was easily removed.

After the removal of the tooth the wound was irrigated to remove particles of bone and clots of blood, after which it was swabbed with ninety-five per cent carbolic acid, then treated with alcohol. The soft parts were brought into apposition and held so by sutures. Primary union was obtained.

All pain, both in the face and in the ear at once ceased, and has not returned. The patient has gained several pounds in weight and her general health is better than for several years.

# REGULAR CONTRIBUTIONS

## PORCELAIN INLAYS.*

BY SYDNEY J. KNOWLES, D. D. S., CHICAGO, ILL.

It is not my intention to attempt to present anything to-night but a very limited number of thoughts on porcelain inlay work. I hope, however, to offer a few ideas that will be of interest to some of you at least. The subject of porcelain inlays is one that for the last few years has attracted more than ordinary attention from members of the dental profession both in this country and abroad. The question as to the usefulness of inlays for restoring lost tooth structure is, no doubt, well settled in all your minds, so I shall say but a few words on that question.

I want at this time to call your attention to some of the advantages that inlays possess over gold, amalgam, cement, tin or gutta-percha fillings, some of which are:

First—Greater immunity from recurrent decay.

Second—Better appearance.

Third—Non-conductivity of thermal changes.

Fourth—More perfect restoration of contour and contact points.

To men who have not had much experience in inlay work, the cement joint is considered the weak point in an inlay; but time and the clinical experiences of different men who have done inlay work, have clearly demonstrated that recurrence of decay is less likely to occur around an inlay than about any other filling.

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*Read before the Englewood Dental Society, January, 1903.

This is due to the sealed condition of the tooth with cement. I consider the more perfect restoration of contour one of the greatest advantages an inlay has over any other filling. The cement in the joint around an inlay does wear out, but probably only to about the same depth as the joint is wide, and no deeper, showing the importance of a perfect fit, which leaves the minimum amount of cement at the joint

I have had the pleasure of seeing several gold inlays that have been in cavities twelve years, also several porcelain inlays that have been in seven and eight years, all of which are preserving the teeth perfectly, the cement at the joint still being visible. Although the cement has worn out somewhat at the margins, it seems to wear no deeper after a certain distance has been reached, which is about as deep as the margin is wide. Not any of the inlays spoken of are as perfect fitting as it is now possible to make them with the appliances at hand. Inlays combine more favorable points than any other fillings used to-day, and for that reason I consider them the most perfect fillings we have for the teeth.

As to their limitations, there are only a few places where porcelain inlays cannot be used, such places being where it is impossible to get sufficient bulk of material to give strength. In such a place it is proper to use a gold inlay. I consider the three most important factors in successful inlay work to be:

First—Perfect fit.

Second—Sufficient bulk of material for strength.

Third—Proper preparation of cavity, in order to have a seating place for filling so that we do not have to depend entirely on cement for anchorage, which is necessary where the cavity is shallow and saucer shaped. It is also very much easier to cement an inlay into a cavity that has a flat base, than in one saucer shaped. As to having bulk of material for strength, that of course is obtained in the preparation of the cavity, as is the seating place. It is the method of obtaining the fit of the filling that I wish to describe.

In the preparation of cavities for inlays there is one point that must be adhered to, that is, preparing the cavity slightly larger at the enamel margin than it is at the bottom or base, so as to have no undercuts. In preparing the walls of the cavity they should be as nearly perpendicular as possible, and well polished, so that a matrix or an impression will be sharply defined and either easily removed without bending.

Cavities in the anterior teeth are prepared so the cavity will be slightly larger at the lingual surface than at the labial aspect, which allows the impression to be removed from the lingual surface. These few suggestions or thoughts will of course be varied according to the conditions presented by each individual case.

The instruments I use in preparing cavities are small gem stones and corundum points of different shapes (see Fig. 1), using burs and excavators simply to open into the cavities, which are then finished with stones. Preparing a cavity for an inlay is a problem in which both personal equation and experience enter into. To obtain a good fitting inlay I have been most successful in taking impressions in cement and doing the entire work in the laboratory on models, away from my patients, the process which I shall now describe.

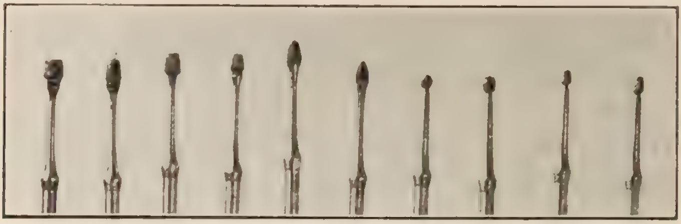

FIG. 1.

### METHOD OF PROCEDURE.

After a cavity has been prepared, you first decide on the color of porcelain to be used, and a bite is then taken in modeling compound to be used as a guide in contour and occlusion, after having been poured in plaster of Paris. In case the cavity be in an anterior tooth only an impression from the lingual surface can be taken. The cavity is now dried, using a napkin, cotton rolls or rubber dam, and then thoroughly rubbed with pure talcum powder which prevents adhesion of cement used in taking the impression. A stiff copper matrix is adjusted between the teeth, as thick as the case will allow (see Fig. 2), when cement, mixed to about the same consistency as for a filling, is rolled in talcum powder and pressed into the cavity, using instruments having straight or paralleled sides for this and not a ball burnisher (see Fig. 3), being careful all the time to hold the matrix firmly in place.

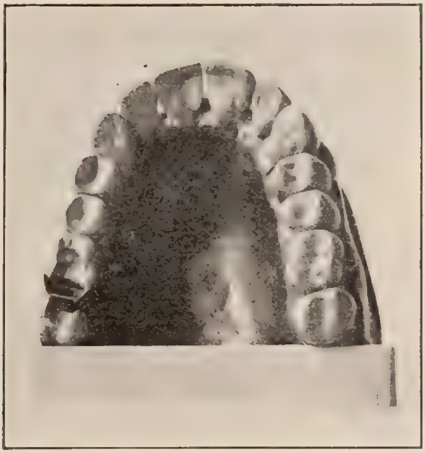

FIG. 2.

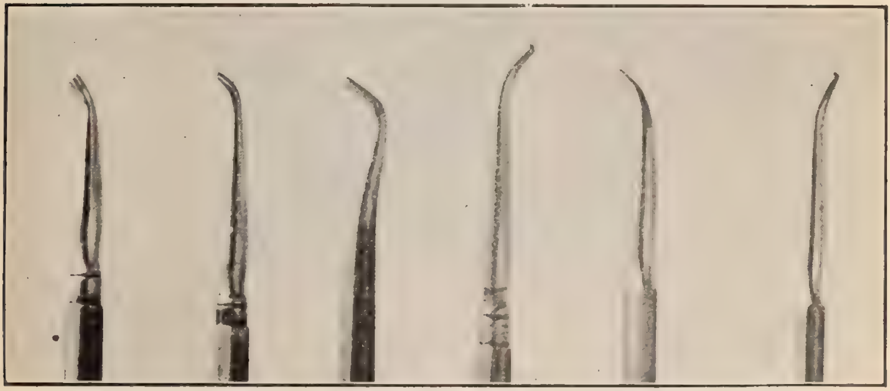

FIG. 3.

Considerable pressure should be used in taking the impression. When the cement becomes hard and brittle, which requires about five minutes, impression may be easily removed by first removing the matrix, which for cavities between the molars and bicuspids is so bent as to be slightly larger at one end than at the other (see Fig. 4 "A").

In taking impressions between the anterior teeth a matrix bent like the letter "L" is used (see Fig. 4 "B"), with short angle on labial surface of tooth forcing cement in from lingual surface. After the impression has been removed the cavity may be filled temporarily with base-plate gutta-percha and patient dismissed. We should now have a perfect impression in cement and a good bite in modelling compound (see Fig. 5).

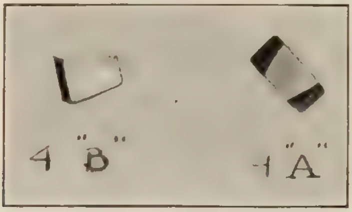

FIG. 4.

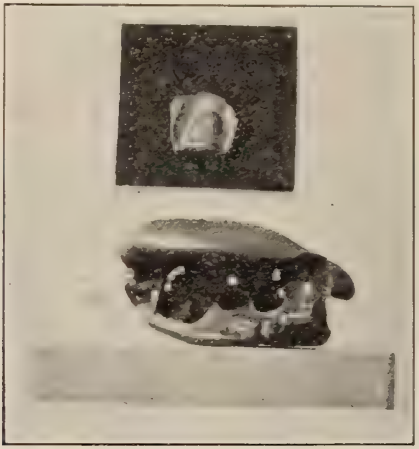

FIG. 5.

The next step is to invest the cement impression in plaster of Paris to protect any frail extensions of cement past the cavity margins; also to make it easier to handle impression. As soon as the plaster is hard the impression is so trimmed as to show but little more than margins of cavity, in order that invested impression may have no undercuts to hinder in making a top or model of cavity in cement (see Fig. 6).

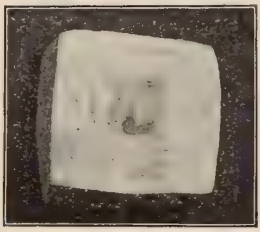

FIG. 6.

The trimmed impression set in plaster is now rubbed with pure talcum powder and the cement then mixed the same as for the impression, using different color if you like. The soft cement is forced down over impression with considerable pressure, being careful to have sufficient bulk to prevent cement from fracturing in subsequent swaging.

The top or cement model should only remain until cement has thoroughly crystallized when it is removed by prying or loosening with a thin bladed instrument. The model or reproduction of the cavity (see Fig. 7), which has been obtained in cement, is invested with plaster of Paris in a small, round tray, called a bed-plate, a part of Brewster's Inlay Swaging Outfit, and the surplus plaster when hard, trimmed down smooth (see Fig. 8).

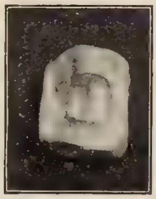

FIG. 7.

The cement model which is practically an exact reproduction of the cavity out of the mouth is now ready for the process of swaging the matrix on, providing the plaster has thoroughly dried out. A piece of platinum foil 1-1000-inch thick,

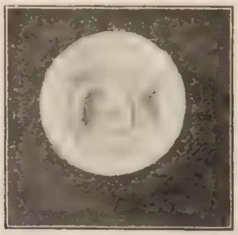

FIG. 8.

after being thoroughly annealed in the electric oven, is placed over the cement model of cavity and partly burnished or swaged to place with a piece of dry cotton held in a pair of heavy foil carriers. The model and platinum with the cotton still in position are both placed in the inlay swager and the platinum foil partly forced to place using a good deal of pressure in swaging; the platinum is then removed from the model to be annealed again in the electric oven. Now for the second time the matrix and model are placed in the swager, this time without any cotton and the matrix swaged to place. The model is removed from the swager and the margins of matrix are burnished with a burnisher which not only more perfectly adapts, but tends to thin the platinum at the margins of the cavity, which is very important.

After being burnished the platinum matrix is removed from the model and trimmed so as to only overlap margin of cavity about one-thirty-second of an inch. The matrix is annealed for the third and last time when it is forced perfectly to place in cement model by the rubber water-bag plunger of swager, leaving matrix ready to be filled with porcelain (see Fig. 9). The baking process usually requires not less than three bakes and sometimes four. The first bake consists of a high-fusing foundation body, sometimes, however, in very large inlays two foundation bakes are necessary. At this first bake I find in large approximal cavities I have been able to overcome a great tendency towards shrinkage by grinding a piece of porcelain tooth to exactly fit from one margin to another.

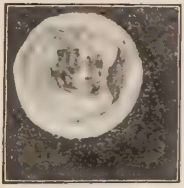

Fig. 9.

The porcelain rod which is higher fusing than the foundation body, mechanically reduces the chances of the platinum matrix from being drawn together at the two margins of the cavity (see Fig. 10).

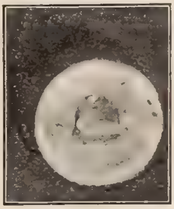

Fig. 10.

After this first or foundation bake, the matrix, partly filled with fused porcelain and porcelain rod, is again placed into the cement model and swaged down so as to force the platinum back to the margins of cavity in case there is any shrinkage,

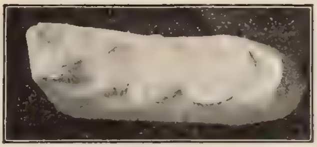

Fig. 11.

which there always is, but which is largely overcome by repeated swaging between each bake and use of porcelain rod, as just described.

The second and third bakes are done with Brewster's enamel bodies, varying in kind to the color wanted, etc. The inlay is built out to about contour desired with enamel bodies, being guided in contour and occlusion by the plaster model made from bite taken in modelling compound (see Fig. 11). The inlay is baked varying in time according to size.

The third or last bake is now made, unless of course, more contour is wanted, or there has been a little shrinkage. The inlay is swaged after every bake except the last when it remains in the oven until thoroughly cool, to allow perfect annealing.

# SOME THINGS WE EXPECT OF THE YOUNG MEN OF OUR PROFESSION.*

Touching on Some *Artistic Considerations*—On the Necessity for *Certainty* and *Expedition* in such Operations as Root-Canal Fillings, and on Advances Toward *Prevention,* Rather Than *Cure.*

BY DR. J. G. PALMER, NEW YORK CITY.

The young men of our profession have so many advantages over those of us who have been in practice for the past twenty-five or thirty years, that very much is to be expected from them in the near future, in developing our work along lines already laid down, as well as in finding new methods. It goes without saying that dentistry has made immense progress, and that the older men have caused this progress. It would require a large volume to even briefly describe the accomplishments of the past thirty to fifty years. These must be carried on and on, and only by emphasizing to the younger men the need for further progress, can they be made to bring out all the good they are capable of. We older practitioners are, to a great degree, responsible for the future achievements of our younger brethren.

Not so many years since, it was *the* thing to extract good, sound teeth, to entirely clear out the mouth, in order that a beautiful set of "store teeth" might be made. Now, these sound or partly filled teeth would be retained as long as possible by the vast majority of operators, and only a partial set made, if indicated, or, if the case permitted, a bridge. Why? Among other reasons, certainly the *esthetic* has been an important one; for the partial set, or the bridge, made to correspond with the remaining natural teeth in the case, causes a much more symmetrical and natural appearance than is usually obtained by the average operator in making a full denture. In the attempt to fill space, to do some kind of bridge-work, since the advent of crowning and bridge-work, glaring, conspicuous centrals, laterals and cuspids have become so frequent that we have grown accustomed to them. Bridge-work is really in its infancy, in many respects, and the younger members of our profession should be so educated toward higher and more artistic ideals, that not merely will they never make such mistakes, but will see to it that the recent graduate is helped so he will not fall into the same pit.

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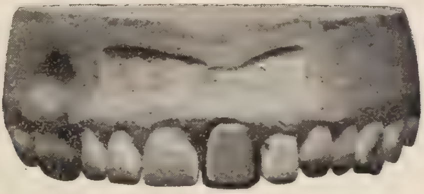
*Read before the Odontological Society of Western Pennsylvania, March, 1903.

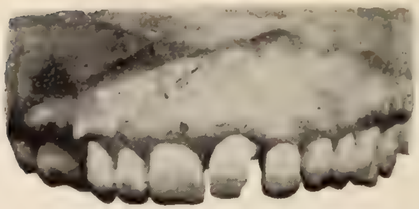
I have some models with me that will illustrate this. I shall have to describe them a little on the model, and then pass them around.



No. 1.

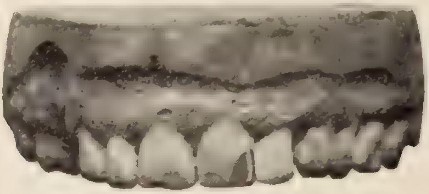
No. I. This patient was a woman of about thirty-two years. The model shows a gold crown in position, a very miserable piece of work, too, that was put in by a prominent operator in New York city.

No. 2. This model has the original cap, and shows the condition of the tooth under the crown when it was removed.



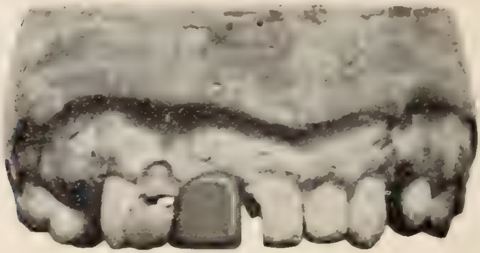
No. 2.

That crown had been on between two and three years. It was removed and the tooth filled.



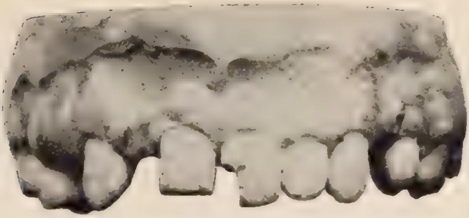
No. 3.

No. 3. This model shows the tooth as it was filled something like four years ago. I saw the case three days since, and apparently it looks as well as the day it was put there.



No. 4.

No. 4. This is another case which is more glaring and which is a case I want to speak of a little later. The model shows the right central and right lateral. The dentist in this case crowned the right central. It undoubtedly could have been filled at that time. The tooth became devitalized under the crown and it had to be cut off and a new crown put on it.



No. 5.

No. 5. This model shows the condition of the tooth after the crown was removed, and you can see just how much was cut from the tooth and how much that tooth had been ruined. So far had it progressed that it was impossible to preserve the tooth when I saw it. I have not a model of the perfect tooth, for I was unable to obtain that.

Here was a young man, just graduated from a reputable college, who was guilty of the gross malpractice evidenced by this model. Evidently he had no esthetic taste, leaving his want of knowledge concerning results out of consideration. It is a sad commentary on the examination given in some of our colleges that this could occur, but a still sadder commentary on the young man who cared so little for the teachings of his alma mater as to lend himself to such desecration. This was done within the last two years!

As remarked concerning the improper and unnecessary extraction of teeth and replacing them with artificial teeth, and the "change which has come o'er the spirit of our dreams," a change which many of those present have had a hand in causing, so in such work as I have just exhibited, a radical change is needed, and here emphatically do we expect our younger brethren to take a decided stand, materially advancing our artistic standards. As their general education in the dental colleges has been toward the higher development of the beautiful and natural, so we must help them foster this development and earnestly frown down on this gaudy and uncalled for display of gold.

### PORCELAIN INLAY WORK.

The insertion of porcelain inlays, which is now so rapidly coming to the front, is along the same line. Like everything else, it can readily be overdone; it may be used where it ought not; but the very fact that attempts are made to use porcelain in difficult places, the fact that the young men are taking such a great interest in its development, tends to strengthen our hope that they will, in the end, accomplish much more toward the development of the artistic side of our profession than we have ever dreamed of. At a recent meeting of one of our New York dental societies, where porcelain inlays were discussed, a young practitioner present remarked to me that he was in dentistry for a living, that he was "out for the cash," and he did not intend to putter around and spend time over inlays, because he could get more money for other work. The sooner he gets that idea out of his head the better for him, and far better for his patients. I am more than glad to believe that there are only a few like him, but that the majority of our younger brethren have more exhalted ideas.

For a long while, Americans traveling abroad have been much observed because of the prominence of gold in the mouth. Long before gold crowns were in existence this was a noteworthy fact. The excellence of the work in gold done in this country, following the teachings of such men as Varney, Webb and Atkinson, enabled American dentists to effect such restorations with gold as to be very conspicuous, until it became, as stated, a matter of notoriety in foreign countries. It remained for an American dentist practicing in Germany, Dr. Jenkins, to bring to such perfection the use of porcelain as to largely eliminate this unsightly appearance and thus bring out the esthetic tendency. So do we expect our younger men to carry on this work that in the very near future we shall see this feature rendered more and more prominent and more readily accomplished.

### ROOT-CANAL TREATMENT AND FILLING.

In 1898, before the New York Institute of Stomatology, Dr. F. Milton Smith read a paper entitled, "Root Treatment; a Positive Method."

Dr. Smith is an ardent advocate of what he calls "immediate root filling." I do not agree with him. In that paper he advocated that he would fill the roots of a tooth, no matter how badly abscessed, if the tooth were not so sore but that he could work upon it, at the *first* sitting. He would cleanse it thoroughly, and complete it then and there. I want to emphasize that statement for this reason: I read a paper dealing with this subject, in Philadelphia, last October. Quoting from Dr. Smith's paper, I said, "Our treatment being, almost without exception, the same in all cases of pulpless teeth, if we can get the root dry, *we expect to fill it permanently at that sitting, no matter what the previous condition,* provided it is not too sore to work upon." In the discussion which followed, Dr. Guilford, of Philadelphia, said he did not understand those who advocate this method to mean "the removal of a mass of already devitalized pulp, disinfection and filling of the canal at one sitting, but that it meant the surgical devitalization of the pulp and its removal, or at least immediate removal of the pulp followed by immediate filling of the canal." In his further remarks he conveyed the idea that the immediate filling of *all* kinds of pulpless teeth was not what was usually meant.

Dr. Smith, who was present, said he *did* mean just that. I know others who say the same, and I believe some of those present are of Dr. Smith's way of thinking. I have said I do not agree with this method. Dr. Guilford said, in the discussion referred to, "I do not understand why Dr. Smith does not have trouble. He must be successful, or he would not have as many patients as he has. I do not understand why he should be so successful in this line when others have failed. The question arises: Is the practice he advocates a good one for others to follow? Does it carry within itself the elements of reason that will commend it as a safe line to follow?"

Eliminating from further consideration cases where the pulp has been surgically removed or has been devitalized by arsenic and removed at the proper time, cases in which we all agree that our work may be positive and expeditious, let us consider those just alluded to—where abscesses exist, or such foul conditions that the passage of any of the septic matter through the foramen will cause trouble.

It is in these cases that, with Dr. Guilford, I do not agree with those who believe in immediate root filling. Nevertheless, there may be a great deal of truth in it somewhere, for, as Dr. Guilford said of Dr. Smith, so we may say of others, they must be successful in this method or they would not have as many patients as they have.

In Dr. Smith's paper, in 1898, to which I have referred, he quotes from one by Dr. J. Morgan Howe, of New York, to this effect: "The progress which we cannot withstand is demanding of us to-day that we shall make pulpless root canals inoffensive, not occasionally, and with much labor, endurance and expense, but that we shall do it often, quickly, and at a minimum of expense."

This brings me to the point which I desire to bring out in regard to the matter. We, as dentists, pride ourselves on the fact that we can do things; that our work is sure, positive, and we will all agree with what has been quoted from Dr. Howe.

With the exception of the few like Dr. F. Milton Smith, and your own Dr. J. A. Libbey, we are *not* sure; we do not agree upon any one method of treatment, even when we prolong the agony, and our results vary. Naturally, the question of personal equation has much to do with one's success, but, if the method of treatment were positive, if it were as uniform for given cases as it is in the preparing of cavities and their filling, failures would be far less frequent., The "positive" method of immediate root filling may be found to be *the* way, and the future will decide it.

You may say the preparing and filling of cavities is purely mechanical while the treatment of a devitalized tooth in a foul condition is full of complications. Granted. It is the medical phase of the case, if you will.

It is immaterial, as I view it, just what the root canal shall be filled with—I am not discussing that question—but it is eminently material in what condition that root canal shall be when filled. If a quick, sure, positive method, which does not vary, can be had, let us have it. I have for a long while felt that we ought to be positive in this matter; that we ought to learn just what and how to do each time. The fact that this question so frequently comes up at our meetings, that it is an old, hackneyed subject, yet ever fresh, proves that we need "more light."

At a meeting of the First District Dental Society of New York, some three or four years since, a prominent dentist of New York read a paper upon his method of treating and filling roots. A gentleman whose name is widely known took exception to the paper, on the ground that it was an old story, that we knew all about it and it was beneath our dignity to have a schoolboy's composition on a subject which was so out of date. His remarks, however, did not meet with favor. Nor was he one who advocates immediate root filling. This subject will not down until that method or that medicine shall be determined upon, which will be successful always.

The old theory that cases differ, that what will answer in one will not in another, is, in this respect, I think, fallacious. The cause is the same—a poisoned condition—shall a penacea be found? This is one of those things in which our young men, with their advanced knowledge, coupled with our experience and our failures, should make marked advances, and we expect them not to rest content with what we know, but to go on with the work until Dr. Smith's positive method, or some one's else, is shown to be so eminently reliable that no one who is careful and conscientious need fail. As Dr. Howe said, this work must be done "quickly and at a minimum of expense." So long as we have cases of abscessed conditions continually presenting for treatment, will we need to be on the alert to do what Dr. Howe suggested, and I consider this subject one of much moment for our young enthusiasts to settle, if they will.

## PREVENTIVE DENTISTRY.

"It is to the study of preventive medicine rather than the study of therapeutics, or curative medicine, that the scientific physician of our times devotes himself."

Apply this idea to dentistry. Is it possible to prevent caries? Shall the coming dentist be able to so watch and ward his patients that there will be no decay? Certainly, viewed in the light of the past, it is not an impossibility.

An inspiration to me years ago, when I began to attend dental societies, was this remark by Dr. C. S. Stockton, of New Jersey: "No tooth is so bad but that it can be saved."

I went home with that ringing in my ears, and many a time since have I succeeded for years in keeping teeth in good condition, which before that I would have extracted. More and more has that grown to be the case in recent years as our profession has advanced, and what may it not lead to? Investigation concerning the minute anatomy of the teeth, and the close microscopical study which such men as Miller, Leon Williams, Kirk, Andrews, and a host of others have undertaken have taught us how to avoid many troubles, how to preserve and—in many things—how to prevent decay. Dr. S. A. Hopkins, of Boston, whose researches have been very productive of information, in referring to this work, spoke of dentists as being the only body of men who were continually endeavoring to ascertain the cause, and to determine upon some method of so combating that cause, that ultimately, should they succeed, there would be no more work for them; they would destroy their own business! The knowledge of all these things, which has been obtained for us by these earnest students, leads up to such matters as prophylactic treatment, and we have an eminent practitioner in Philadelphia declaring that, if patients will come regularly once a month, and submit to his method of cleansing, etc., he is sure he can *prevent* decay. His statements of what he has done for some children, the small—exceedingly small—amount of decay in their teeth, and the results in some cases for adults which I have seen from his hands, would tend to show that there is a great deal of truth in his claims.

It is certain that much has been accomplished in the way of checking, if not entirely preventing caries, and ultimate success, if only in entirely checking its progress, would soon eliminate from our work that portion first referred to, the treatment of pulpless teeth, for we would cease to have them, and Dr. Howe's statement that we have such work to do "often" would be a thing of the past.

Again, in the theory of "Extension for Prevention," do we find the same idea expressed on other lines, showing that the minds of the thinking, progressive men in our profession are considering more and more those things which shall prevent rather than cure.

Considering more at length the idea of oral prophylaxis as the true road to prevention, I wish to quote from an article by Dr. D. D. Smith, of Philadelphia, in THE DENTAL SUMMARY for December, 1902:

"The developments are truly wonderful and border almost on the marvelous. The complete arrest of decay in deciduous teeth, and practically the same of all decay in adults; the more perfect alveolar development, the return of abnormally sensitive gum tissue to its normal condition of low grade sensibility, the extirpation of mouth infection, presents to the dental profession matters worthy of investigation. My prophylaxis treatment for the mouth and teeth consists in a *forcible change of environment* at regular intervals, and the most thorough and complete polishing of all exposed surfaces, *once every month*. By that means I am able to maintain that much-to-be-desired condition which is aptly described as "dental organs scrupulously clean, gums of normal tint, firm and healthy, and a clean mouth."

He refers to an editorial in the November, 1902, number of THE SUMMARY on this subject, in which it is stated that "by the strict supervision over the oral cavity phosphor-necrosis has been almost entirely stamped out, there being but four (4) mild cases at present among the two thousand (2,000) employees of the Diamond Match Company."

Certainly this would show a remarkable result, and should cause us to call a halt and consider seriously this question of prophylactic treatment.

In this same December issue of THE SUMMARY is an article on "Preventive Dentistry," from the *Lancet Clinic,* by Dr. C. M. Wright, of Cincinnati, commending Dr. Smith's method and ideas, and pointing out some of the difficulties in the way and offering his suggestions toward avoiding these difficulties. His article is well worth reading. I will quote only one passage: "From the beginning it has been held that clean teeth are far less liable to disease than are neglected ones, and yet from some faults in habits of practice, rather than in theory, the dental profession has slighted the fundamental operation in prevention, and devoted itself to more attractive and ingenious methods of cure and *partial* prevention."

Here, then, from three eminent sources, we have strong arguments for prevention. To whom shall we look for its accomplishment? The older men are firmly set in their ways. It is not easy to hew out a new road, but the young man just entering upon his life work has, I think, a golden opportunity before him in this one thing above all others. Such a result would be ideal.

Though we may not have the right to expect that the young men of the present generation will achieve all this, we have good ground to expect that they will carry on the work which has been begun, to such an extent that many of the ills connected with carious and diseased teeth will be things of the past; that the patients will know much better than now to help themselves, and the dentist's work will resolve itself into a system of prophylaxis rather than that of continually stuffing cavities.

I have touched upon only a few of the important subjects with which the dentist is continually brought in contact and have emphasized only a few of the important things which the coming young man of our profession must thoroughly understand. I do not mean that the older men are in danger of being left—by no means. But all things in time—and those things which we or our predecessors have failed to solve, or failed to bring out to the fullest extent, are a legitimate heritage of our younger brethren, and we have the right to expect much, very much, from them on these and kindred subjects.

# GOLD LOWER PLATES.

BY DR. L. P. HASKELL, CHICAGO.

Take an impression always in plaster. Upon removing the model, build up with flaring sides so it will drop readily from the mould. Make Babbitt Metal die. For patterns use tea-chest-lead, Japanese is preferable. Form patterns so as to swage in two pieces, each one entending six and one-half inches beyond the teeth. The plate can be partially formed by lower bending pliers. After swaging each piece separately, swage the two together. Trim the *upper* one the width desired always extending well up *on the necks of the teeth,* as the plate will set steadier and giving more width for strength. Leave the lower section untrimmed so as to have a margin upon which to lay the solder. Borax well the two surfaces, and clamp together with two clamps. Lay the solder all along the margin which was left untrimmed and apply the heat from the upper margin so as to draw the solder between. This will give a nicely fitting plate, reinforced by doubling or lapping the two sections.

It must always be borne in mind that a lower plate, full or partial, must not be so deep on the *lingual* side as to be lifted by the muscles and glands, which often rise above the top of the ridge. When preparing to make a plate always have the patient raise the tongue to the palate and act accordingly.

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# AN EASY METHOD OF MAKING A GOLD CROWN FOR ANTERIOR TEETH.

BY J. M. KING, D. D. S., BROOKSIDE, ALA.

The most economical, quickest and best way to make anterior gold crowns is to grind the square end of the dentist's anvil in a shape for contouring and then give a high polish. Obtain a small hammer best suited for your use, take measurement of root and make band of 30 gauge gold, fit on model and contour next to gum with hammer and anvil and crescent contour flush. Trim band so it will go under free margin of gum, contour band, trim plaster tooth and trim band lingually so as to get an alignment. Then trim bite from band, and solder a piece of gold over this which makes the work complete. A little pains will enable any one to make a crown which has extra good shape and the thickness of the gold will allow for a good finish. Use tripoli for polishing and then a chamois polishing wheel with rouge thoroughly incorporated in it. This rouge gives it a beautiful finish. A little practice will train the operator to make the so-called hand-made crowns which look well—though I am not a strong advocate of anterior gold crowns. Every practitioner has some to make sometime in his life and to be able to do it at home is of great advantage.

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# THE RELATIVE AND COMPARATIVE MERITS OF SURGERY AND PROSTHESIS IN THE CORRECTION OF HARELIP AND CLEFT PALATE.*

BY G. V. I. BROWN, M. D., D. D. S., MILWAUKEE, WIS.

It is a far cry from 1764, when Le Monier first closed cleft palate, to the present, 1903.

The brave men, surgeons and dentists, who have struggled with the difficult problem of giving relief to those half dumb, grief-stricken unfortunates, who, bowing to the inevitable, have been doomed to pass through life marked by the hand of a fate no man can understand; in, yet not of the world; among, not of their fellows; living in the depressing gloom of a shadow that the sunshine of hope could never fully penetrate or quite dispel, deserve a notice we cannot give them to-night, through want of time, not inclination.

The hopes, fears, trials and disappointments of our predecessors in the work have traced two lines along the record for our benefit, and those, as we set them over against each other, are found to be prosthesis and surgery, mechanical ingenuity versus surgical skill.

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*Read before the Odontological Society of Western Pennsylvania, March, 1903.

Which has done the more for humanity it is difficult to say. Each has done much, yet neither has filled the full measure of its intended office. That there can be no just comparison between the prosthetic appliance, an irritant at best, and natural tissue, as a covering for the mouth, cannot be denied. Protection to the nasal passages, the eustachian tubes and mucous membrane of the pharynx afforded by successful operation must be more beneficial and a greater preventive of disease than a plate or obturator of any form.

This much then acknowledged, we have left us for consideration two propositions.

First: Why has the use of obturators been necessary heretofore, and what has been shown to be their objectionable features?

Second: Is it possible, by modern surgical methods, to do away entirely with mechanical devices of any kind for covering the fissures in cleft palates in all cases, and can as good, or better, speech results be secured with natural as with artificial vela?

Obturators have been required, as being the only relief possible, for patients whose cases were beyond the reach of surgical skill, according to old methods. Therefore, any benefit thus conferred was a great one, and even a slight improvement in speech was a boon beyond price to the individual, one not to be slightly estimated.

It is true that palates, resulting from surgical operations unskillfully or improperly performed, are often so stiffened by cicatricial tissue, and sometimes drawn so tightly that the velum, instead of being flexible, yielding to the slightest muscular movement, as it should in order to perfectly perform its part in the office of speech, is incapable of rendering assistance by raising and lowering as it should, in which case it is fair to assume that, if an obturator with a flexible velum had been adjusted with the greatest possible care and perfection, it might have been as much, or even better, assistance in speaking.

Thus, the utmost limit of comparison might be said to be a poor or imperfect surgical result with the highest degree of perfection, practicable for prosthetic apparatus, and still we have left to consider that difference always recognized between an artificial denture and natural teeth; crowns or bridges on roots in situ and teeth upon plates.

We have also the additional difficulties of uncleanliness and the perishable nature of most materials, especially rubber, in contact with the offensive secretions due to hyperthrophic conditions of the nasal mucous membrane, omnipresent under these circumstances.

By a system which it has been the chief object of my life to perfect during the past few years, of my almost absolute devotion to it, every form of cleft palate can be closed by operation. The reasons for this statement will be better understood by a study of the following outline of operative consideration.

Generally speaking, it has hitherto been understood that certain forms and conditions of cleft palate could be cured by operation, while for others, operative measures were comparatively useless.

For example: In early infancy, from birth to the third month, or where the fissure was not too wide and the sides of the palate favorably shaped, operation was indicated. With adults or older patients, having unfavorable clefts and palates, a prosthetic appliance was likely to prove more useful.

The reasons why the suggestions herein set forth are dignified with the title of a system is because, by a systematic application of orthopedic principles, all forms and conditions of these deformaties are brought to a nearly common plane, through the readjustment and correction of unfavorable conditions, with due recognition of those differences which distinguish simple from difficult or impossible cases.

When children are born defective in lip or palate, or both, the question naturally arises as to whether an immediate operation is advisable or not.

In favor of operation in early infancy, it may be said that the jaws, not being fully ossified, are in a sufficiently plastic state to allow their being easily crushed together, and the separation closed immediately by operative measures; that the later widening of the cleft which follows, if cases are neglected, does not occur. The child takes nourishment to better advantage. Speech habit is assured, since with the covering to the palate from the beginning, little or no opportunity is given for the establishment of imperfect speech.

The objections are: First, high rate of mortality among infants under surgical operation of any kind; second, in such cases, the added danger of meningitis from infection or pressure, or both, must be considered; third, loss of vitality from hemorrhage and other direct effects of operative procedures, in spite of the admitted fact that shock in the common acceptance of the term may not be so serious a factor in infancy as in later life; fourth, disturbance of the digestive tract and consequent loss of nourishment, due to mouth bacteria and difficulty in taking food incident to the sutures and plates with which the parts are secured, must be considered with reasonable gravity; fifth, it is the belief of the writer, based upon observation and experience, that the characteristic appearance of the face, nose and lip, resulting from arrest of development following radical operation in early infancy, is not so good, nor is the soft palate, usually obtained in the haste that, with the newly born, is imperative, likely to be so perfect or afterwards so useful as one treated under conditions where more deliberate methods are possible.

To maintain the advantages, and avoid, at the same time, the disadvantageous conditions of early operation, should then be the purpose of any line of procedure in these cases.

In order that increase of deformity by neglect may not occur, it must be remembered that, at birth, the lower jaw has undergone ossification much in advance of the condition of the superior maxillæ and bones of the nose and face. Therefore, the crowding of this wedge-shaped harder body between the soft, yielding and ununited lateral portions of the palate by the muscles of mastication exerted in efforts to suck and in taking food, must force them farther apart.

In crying and laughing, also, the muscles of the mouth and cheeks pull apart and influence, in a marked degree, widening of the intervening space. Therefore, if early operation be considered an unnecessary danger, the first necessary step must be to protect the child from greater distortion, and if possible, to reduce the deformity.

Unequal development almost invariably is noticeable in these cases.

My method of wiring, to correct this feature and to simplify the lip operation by reducing the width of the lip and palate fissures, and in addition to insure a straight nose for the individual, as well as regular facial appearance, has been described in a paper read by me before a section of the American Medical Association, but even this method I have since been able to make more simple, where the infant can be placed under treatment sufficiently early.

With strips and bandages properly applied, the lip may be bound with the sides of the fissure in contact. This gives little or no inconvenience to the child; enables it to take nourishment by sucking naturally, thus aiding its development and preparing for the success of a future operation. The action of the lower jaw cannot, under these conditions, crowd the parts and increase the palate deformity, while laughing or crying exerts muscular power to reduce the separation instead of widening it, and stretches the lip so that usually there is an abundance of tissue, where otherwise it might often be so scant as to make artificial results extremely doubtful.

The story of orthopedic surgery is a simple one; mechanical correction in the form and character of osseous structures and revision of maladjusted ligamentous and muscular attachments of articulating bones until, by ingenious application of the one all important principle, that bodily tissues, under all circumstances, yield to steadily exerted pressure.

Many of the more radical surgical procedures in the treatment of these cases have been done away with. Obviously, then, if the palatal fissure be too wide and the lateral surfaces of the palate too flat, to admit of a successful surgical operation for immediate closure, the space to be bridged across the fissure must be made narrower, and the angles of the side more accentuated in their slope in order that, when stripped away from the borders of each side, the periostium and other tissues, when brought down in the center, may meet without tension, by simply making the arch of the palate flatter.

The advantage of this procedure in operation has long been recognized where the mouth was naturally favorable in form, but so far as I am able to learn, this method of correcting the shape of every unfavorable mouth, so that it may be converted into the best possible condition for successful surgical operative purposes, is original; yet, a moment's thought in consideration of the following propositions will make it clear to any one that there is practically no limitation to the possibility of this work.

If the patient be one in early infancy, simple harnessing of natural muscles, as previously described, is sufficient. At one year old or a little later, appliances attached to deciduous teeth, admitting of gradual pressure being exerted by nut and screw thread, will, without serious distrubance, overcome the natural difficulties almost entirely. Operation is then not only easier but safer, and yet speech defects have not had time to become established habits.

In later life, either by fracture and immediate moulding of the parts with splint, to hold in the desired form, or weakening of resistance by cutting the external walls of the superior maxillary bones partly through, especially, at the malar processes and in the region of the tuberosity, an appliance similar to the one used for younger patients may then be used to accomplish the purpose of reducing to ideal form very nicely.

Whatever the method of correction may be, and no matter how perfect it may be accomplished, whether by surgical or prosthetic means, with natural or artificial agents, the immediate results, as regards speech, will be disappointing. Just as one finds it difficult to pronounce the words of an alien tongue, and in attemptting to do so, is not conscious of the accent which proclaims to all, the place of his nativity, so with the wearer of an obdurator and the possessor of a new soft palate. The old defects will remain, until eradicated by careful study and patient application.

The reason for this obstinacy upon the part of these adjuncts to speech mechanism may be better comprehended by a cursory glance at the complexity of the performance of this function.

Briefly stated, we understand that in speech the muscles of the chest, which are responsible for respiration, the muscles that raise and lower the larnyx, those that tighten the vocal cords and tip the hyoid bone, as well as resounding properties due to the nearness of the spinal column, and the cooperation of the forces that are applied in raising and lowering the soft palate, the adjustment of the tongue, proper action of the muscles of the cheeks and lips are all necessary for the utterance of even a single word. If, therefore, during the life of the individual, through faulty operation or adverse action of these agencies, wrong messages have been constantly sent to any portion of the brain concerned in making a certain sound, and if the auditory memory centers have registered by the constant hearing imperfect sounds for specific words, which will accordingly have caused the development of brain structure which is all active against correct speech, and if there be an insufficient development of those centers which are needed for perfect speech, how great becomes the difficulty of giving a speech power to individuals in the face of all these acquired disadvantages.

With these simple principles in mind, I would call your attention to the phonographic records of the speech of a young woman twenty-two years of age at the time of operation. The first, you will notice, is almost inaudible, although taken with great care. The cast of the mouth of this patient shows cleft through both hard and soft palates. After operation, we find her able to make sounds more clearly, and yet, the unpleasant defects are still very noticeable, although the third record taken a few weeks later shows much improvement.

Other records that I have here, taken from similar cases, show about the same results; all improved, but none were immediately perfect.

One patient, whose speech is indicated through the phonographic records, was fourteen years old last September, when her palate was closed by operation. The graphophone demonstrates that she could scarcely make an intelligible sound at that time, having been one of the most difficult patients to understand in conversation that I have had. To-day, you will find, she recites quite well the few lines that she has been taught to say with special reference to overcoming bad speech habits.

There were many words in the few lines to which you have just listened that were exceedingly troublesome, and one by one each had to be overcome. For example, she always said "yeterday" instead of "yesterday," and as all such patients do, hurried over the words and syllables that could not be pronounced without assistance from the palate before operation. I found that by using the voice as in singing, the tendency to slur certain letters was most easily mastered. In this manner, every case must be studied and individual peculiarities noted, for these patients do not all have the same defects, as is commonly supposed.

In conclusion, I feel warranted in saying that, even with a full realization of the difficulties and uncertainties of this work, there can be no case of cleft palate that may not be closed by operation and treatment, if persistently and systematically pursued.

The possibilities of speech improvement are limited only by patience and opportunity and are dependent almost wholly upon the intelligence of the patient.

# CURRENT ARTICLES

[Condensed for THE DENTAL SUMMARY readers.]

## THE TECHNIC OF MATRIX MAKING.

### BY W. T. REEVES, CHICAGO.

Platinum one one-thousandth of an inch in thickness is what I have always used and it has several points that make it superior to platinum one two-thousandths of an inch in thickness. The very fact that it requires more work and care to burnish into the cavity will cause a more perfect matrix to be made when the work is accomplished; also it will have more stability and reduce the danger of warpage, while baking the porcelain, to the minimum.

The burnishing of the matrix I divide into four divisions or steps; needless to say that the burnishing at each step is repeated until accomplished, annealing each time the matrix is returned to the cavity. A piece of one one-thousandth inch platinum is cut large enough to extend well beyond all the margins other than the cervical margin. After annealing in the Bunsen flame, place in position so that the surplus will be about equally distributed beyod the margins of the cavity. Take a piece of wet cotton or spunk and place so as to depress the platinum into the cavity, using a minimum sized round-nosed burnisher and adding additional pledgets of the wet cotton as the platinum is carried to place, care being taken that at no time are you in danger of the burnisher going through the cotton. At this step you do not attempt to turn the platinum over the margin. Remove the cotton and matrix from the cavity, and if your packing has been thorough, you will find the platinum has been carried to every part of the cavity and your margins are fairly well defined with little or no danger of breaking through the platinum. If you have broken through the platinum inside the cavity, no harm will result as the body will bridge across without danger of flowing through. If you have any surplus at the cervical margin that will press upon or hurt the gum while burnishing, trim away at this time. Anneal and return to the cavity for the second step.

Pack partially full of wet cotton but not over the margins; then, using any method that is easiest, turn the platinum over all the margins and down upon the tooth. To accomplish this I use a piece of ordinary twilled tape, passing it up so as to engage all portions of the platinum at once, then draw it in the direction that will cause the platinum to lap over the margins in all directions, thus bringing the folds equally distributed around the surfaces of the tooth, and fairly well burnish to the surface of the tooth.

Remove from the cavity and if the platinum has lapped over the tooth far enough to bind and hold into the cavity, trim away until the matrix will remove from the cavity freely. Anneal and return to the cavity for the third step.

At this stage your work is entirely upon the margins. The platinum that lapped over on the tooth will enable you to hold the matrix into the cavity securely enough with your fingers for you to accomplish this work. All wrinkles or folds must be burnished out and beyond the margins in both directions. It matters not if the matrix springs from one part of the cavity while burnishing upon another, although you will endeavor to hold it place as firmly as you can; the next step will correct all faults of that nature.

I use the burnisher so that the head bears upon the margin cavityward and the shank upon the margin toothward; in this manner you will burnish every portion of the margins until you are satisfied with their adaptation to the tooth. Also burnish the interior of your cavity so that your matrix will have as close adaptation in the tooth as at the margins.

It may be necessary for you to anneal several times before you complete this stage of the work, but do not leave this stage until it is thoroughly completed.

Now the last and final burnishing. For this burnishing I use a strip of rubber dam which is drawn tightly and binds the matrix into the cavity in all directions. You can now go over all the margins and surfaces and burnish out all the spring there may be in ay part of the matrix. It is not necessary to spend as much time in burnishing at this stage as you did at the previous stage. You had practically secured your close fit before you came to this last stage, consequently about one-third of the time spent will be sufficient to give you close adaptation of all parts of the cavity and walls of the tooth.

Then comes the task of removing the matrix from the cavity without warping it. By patient and careful teasing you can accomplish this without any warping; if you are afraid that you have sprung it ever so slightly, dry out the cavity and dry the matrix; place it in the cavity and use the rubber dam again; this time it will tease out easily. The capillary attraction of the saliva between the matrix and the tooth will often hold it very tightly. Grasp the edge of the platinum at some point as far removed from the margin as possible, and where there is no fold to make it rigid, with a pair of laboratory pliers that you can lock; burn off the saliva in the Bunsen flame to avoid any possibility of gassing. The matrix can now be handled freely in building in the porcelain, for the bending of the platinum will take place at the pliers and not near the margins. At this stage, if desirable, the patient can be dismissed as there is no necessity of reburnishing any part of the matrix after having done a baking.—*Extract Dental Review.*

* * *

# WHERE SHOULD PORCELAIN INLAYS BE EMPLOYED?

### BY W. T. REEVES, D. D. S., CHICAGO.

I am going to make this broad statement: There are scarcely any cavities where gold can be utilized, that porcelain cannot be successfully used, and there are so many places and conditions under which gold cannot be used, and where porcelain will be a perfect material with which to restore lost tooth structure, that I place it first in point of applicability.

I will not take your time to enumerate all the places porcelain can be used, but only some of the conditions where gold could not be used and where porcelain will do perfect service, and then some cavities where porcelain is the only material indicated, and which goes to prove a quality that porcelain possesses, and has not had accorded it.

Under the first will come the following:

For the young, in whose mouths gold fillings fail faster than cement fillings wash out, and where cement dissolves out so fast as to be dangerous, you will come very near doing permanent work with porcelain.

For the aged, whose strength will not permit the long sitting necessary for the insertion of a gold filling, you can do permanent work with porcelain, because you can divide the work between two or three sittings.

For those bordering on nervous prostration, and those high-strung nervous temperaments, for which it is a physical impossibility to prepare a cavity, even for a cement filling, to say nothing of gold, you can do permanent work with porcelain.

For those refined, sensitive natures, to whom the display of gold in the front of the mouth, is an ever conscious annoyance, you can confer a lasting benefit by the use of porcelain, and restore teeth to a condition so that persons at close conversational range would not know there are any fillings there.

In teeth that are loose from pyorrhea, you can do permanent work with porcelain, whereas you could not pack gold either by hand pressure or mallet, and would have to resort to amalgam or cement.

The other condition which is by far the most important and which proves a quality that has not been credited to porcelain under its proper classification, and brings out the first point I want to make, are found in the following in which porcelain only is indicated: Extensive cavities where decay has encroached so close upon the pulp, that death of pulp would be almost sure to follow if filled with a metallic or cement filling, you can fill with porcelain with almost absolute security that the pulp will remain alive. Cavities in the buccal surfaces of molars and bicuspids at the gum margin that remain sensitive to anything hot or cold taken into the mouth, and cavities on the labial surfaces of the anterior teeth that are sensitive to the drawing in of a cold breath, when filled with gold, become perfectly normal when the gold is replaced with a porcelain inlay.

Accidents to the young, that result in the breaking off of a large portion of an anterior tooth, where it is desirable to retain the pulp alive, on account of the incomplete development of the root, can be restored to full contour and usefulness with a porcelain tip, and the pulp will remain alive.

In these and other similar cases, nature revolts at the introduction of any metallic or plastic material for the replacing of the lost tissue, but is perfectly resigned to the introduction of porcelain in the form of inlay or filling and resumes its normal functions and goes on its way rejoicing, and your patient does also.—*Extract Review.*

# THE PLATINUM MATRIX.

BY W. A. CAPON, D. D. S., PHILADELPHIA, PA.

The platinum matrix is used because it has softness sufficient to obtain a proper impression of the cavity and is rigid enough to allow of withdrawal without changing form. Its fusing point is high enough to stand the most extreme heat required for the fusing of any porcelain, and it does not debar the use of any material from glass upwards, thus avoiding the care necessary when using a metal such as gold having a lower fusing point. The correct thickness is .001; this can now be obtained at any dental depot, and some dealers have it annealed ready for use, which is of great advantage. A thinner platinum foil is often used with the idea that it is better adapted for this purpose because it leaves a less line of demarkation between the porcelain of the completed filling and the margins of the cavity. The difficulty with a platinum thinner than one-thousandth of an inch is that it perforates too readily and has less stability after it is in form. The use of the thinner platinum is based chiefly upon the erroneous idea that it can be pushed into a cavity and the wrinkles burnished out as with pure gold foil.

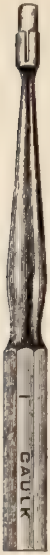
Platinum as it is generally purchased is harsh, and therefore the first procedure is to anneal it thoroughly for at least five minutes at the highest heat possible for the safety of the furnace; if sufficiently heated it will resemble a piece of tin foil in its softness. Do not use an open flame for it cannot give the heat required and the action of gas on platinum is deteriorative as it forms a carbide. This result is one of the troubles continually besetting the use of a gas furnace with a platinum muffle, for no matter how well the chamber is made, even with welded joints, there will in time be a mysterious leakage causing gassing of the porcelain.

This fact is mentioned merely to substantiate a statement, because there are some who recommend and practice the use of an open flame for annealing. Even an oxyhydrogen blowpipe will not secure the softness obtainable by an electric oven, and with a blowpipe there is also the easy possibility of burning the metal.

### MAKING A MATRIX.

The platinum being of the necessary softness, cut a piece somewhat larger than the cavity in the tooth, large enough to hold in position with the finger-tip, then gently force it into the cavity with rubber tips, shown in Figs. 25, 26, and 27.

One of the best means of doing this is by the use of an ordinary "penny" pencil with rubber point, as shown in Fig. 28; this will form a distinct outline of the cavity edges. In large, deep cavities too much force will send the foil too far and cause it to fold on itself; but this must be avoided. Taking advantage of the depression made in this manner follow it up by using various sizes of ordinary amalgam burnishers as shown in Figs. 29 to 40, three or four, 31, 34, 38, and 40, being a sufficient assortment; rotate the ball end with gradual



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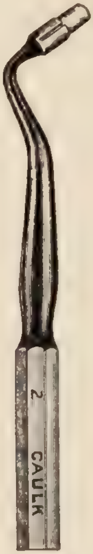

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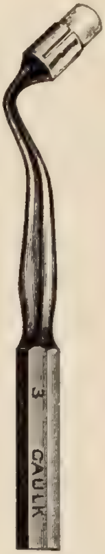

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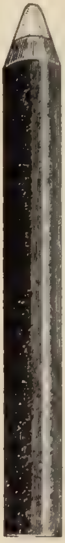
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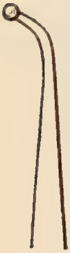
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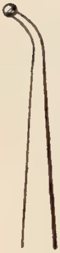
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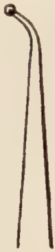
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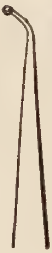
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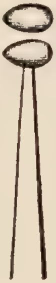
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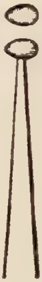
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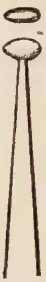
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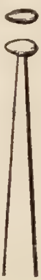
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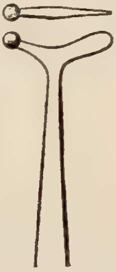
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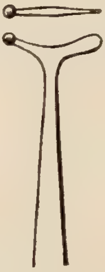
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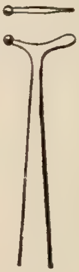
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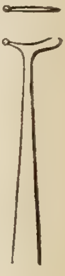
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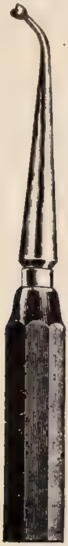
pressure until the impression is better defined and the metal shows a tendency to break. This being done, pack small pieces of spunk or chamois skin until the foil is driven to every surface leaving the edges sufficiently clear to allow of their being thoroughly defined by using the flat surface of the burnisher. A very simple assistant for the purpose and one that can be used on almost any cavity is a ball burnisher with a section cut out of it, as shown in Fig. 41, the edges of the ball being polished, there is no danger of tearing the platinum. After using this instrument the impression should be very complete and ready for withdrawal from the cavity, first gently removing the spunk. Cotton is frequently used for packing, instead of the spunk or chamois skin, and while it will do the work quite as well, it cannot be removed so easily, for in the majority of cases the matrix will be broken at the bottom and the cotton will tangle on these edges and the removal of the shreds endanger the shape. Many beginners in this work are dismayed at finding a hole in the matrix and keep trying to make one without breaking, in fact I have known them to give the work up, quite discouraged, when in reality if it is broken it is immaterial except in rare instances.—*Extract from Dental Brief.*



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# SOCIETY PROCEEDINGS

## ODONTOLOGICAL SOCIETY OF WESTERN PA.

### THE FIRST MOLAR OF THE PERMANENT SET OF TEETH.*

### DISCUSSION.

**Dr. O. L. Hertig**:—It is discouraging to look over a child's mouth and see the teeth in bad condition, due to bad care. But discouraging as it is, if we do not take that matter in time, there will be more and more discouraging things happen in the future. The first permanent molar is by rights the first and best developed tooth in the arch. They are placed in the arch anatomically, where they do the best work subdividing the food. If you destroy them you take from the arch this important adjunct of the very important function of mastication. I think great care should be taken to preserve them.

Now there is a little event that takes place between the ages of eighteen and twenty-four generally, which has a great deal to do with the divine plan of mastication; namely, the eruption of the third molar. The practice of extracting the third molar in a perfect set of teeth I believe is a good one. But if, as Dr. Faught says, through neglect these first four molars have been lost, and through this destruction of good form the second molars may have moved forward, that these third molars coming in, as they do, at the age of eighteen to twenty-four, take the part the second molar would have occupied provided the first were in, thus producing an unbroken arch. I think the first four molars are the most important in the mouth and for my part, I would not take a thousand dollars apiece for mine.

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*This paper appeared in the July Summary.

Dr. Palmer:—I want first to oppose Dr. Hertig most decidedly as to the third molar. I do not believe that the Lord Almighty gave it to us to be used as an auxiliary, but it has just as much function to perform as any other tooth. I have in mind a case where I had hard work to persuade a mother of a little girl to retain the six-year molar. The second molar was badly abscessed, the pulp was exposed, and the right upper and the left upper were the only ones in anything like decent shape. The four molars had been extracted for the two brothers, and the mother thought her teeth were very nice, but she finally concluded that I might do as I pleased. I put them in order and the young lady is about twenty-five years of age today. She has her third molars and the occlusion is as perfect as any occlusion of the kind. She keeps her mouth clean, and those teeth do service, the third molar as well as the six-year molar.

But I want to emphasize one point Dr. Faught touched upon in regard to the use of the six-year-old molar, its proper occlusion, that once the occlusion between the six-year-old molar is properly obtained, the rest of our troubles in any given case of irregularity are reduced to a minimum. If you will take any case of irregularity that you have and move those molars so that you get what you know to be a regular occlusion of those six-year-old molars, you will see how they will carry themselves into place very easily. Dr. Engel showed a case of a woman, thirty-eight years of age, where he questioned whether he could do anything for her, but he finally succeeded in obtaining results that are marvelous. The six-year-old molars had been extracted when she was a child, the teeth had moved so that the deformity was marked. He wedged the lower teeth apart until he obtained as nearly as possible the natural space that would have been there had she retained the six-year-old molars, and then placed in that space an appliance to keep the teeth apart, the result being that he had obtained a marvelous change in her face, a change that showed in any photograph that was taken.

Dr. Talbot:—The six-year-old molar, or all of the teeth in the jaw, must be studied from a broader standpoint than is taken by dentists. It means a great deal more than is taught in our dental colleges. We must consider the evolution of the jaw, and the evolution of the jaws and teeth should be taught to the student in the college. When we consider that the lower animals had from forty-four to seventy-two teeth, and that they were all jaw and no brains, as in the shark and the chameleon, etc., and then come along down through the ages to man at the present time, and then we say that man has not yet reached his perfect order; that evolution is still going on in man, we can get some idea of the condition of the teeth.

Now, it may occur to some of you gentlemen that dentistry is saving teeth; that decay is only a temporary affair. But decay of the teeth is a natural order and is going on to eternity. The dentist is not saving teeth, he is only doing a little something to stop decay for the present evolution of man. Decay is a natural process and has a nationality. We are the third nation of people that are suffering from decay of the teeth; the Norwegians and Swedes are the second, and the English people the first. The English people as a nation are degenerating from the jaw and tooth standpoint to a greater extent than any other nationality in the world. This is my own personal experience of thirty-two years, and I am talking not from books, but from knowledge. To such an extent has decay of the teeth been going on in England that it has become a national calamity, and the nation is furnishing money and appointing committees to investigate the cause.

Now the teeth are changing, the jaws are changing. The brain is developing forward, and the law of Aristotle, which he laid down two thousand years ago, is just now coming into vogue. Now this law of evolution is applicable to what I am going to say about the first permanent molar. It is the struggle for existence between organs. That is the law whereby an organ or structure is lost for the benefit of the organism as a whole, and the whole line of evolution from the Greeks to Darwin, is based upon that law, and we, as dentists, have got to study the jaws and teeth from that law of Aristotle. We do not need our jaws to-day. We can manufacture foods in our laboratories that are much better than the foods that are cooked in our kitchens. Look at the foods that are produced for patients in our hospitals, baby-foods taking the place of mother's milk, and thousands and thousands of children are fed on them. The time is coming when the food will be made by the laboratory and we can carry it around in our vest pocket. No etiquette. The present mode in society is doing more to cause decay of the teeth and degeneration than any other thing. A dog on the street will pick up a piece of meat and sit down and chew it and snap his lips and teeth and get more pleasure out of chewing that food than any human being. We go out into society and sit down at a table, and etiquette prevents us from chewing our food, so we sit and close our lips and swallow our food whole. You must not open your mouth at the table except to talk. But you go down here to the Edgar Thompson steel works and you will find that fifty men to-day are doing better work than five hundred did ten years ago. It simply shows this point of the development of the brain that is going on. We will all be angels some time or other, and this earth and the physical part of man will pass away and the brain will be so developed that we can get along without physical labor. That is the point I wish to make, and mastication is one of these points. In the evolution, we pass through the lower forms of animal life up to man, and as we pass through these forms we have arrests of development, and they account for all these monstrosities that take place in human beings, of club feet and deformed parts of the body. As we advance in civilization the jaws are receding, growing smaller, at the expense of the brain, and that is the law of Aristotle.

What is the result? Instead of having seventy-two or forty-four teeth, we have thirty-two teeth at the present time. But, as I say, we have not reached our highest civilization; we are evoluting all the time. And as the jaws grow smaller there is not room for the teeth to come in. All the other structures of the body develop from a nerve, an artery, a vein—a nucleus. The teeth, on the other hand, are developed from the periphery, they commence to calcify from the outside, and as a result of that the teeth do not grow small in proportion as the jaws recede, and the result is that there is not room for the third molar to get into place. It is not that this third molar is there to take the place of some other; they are there for some purpose. They are passing off, and they are not passing off fast enough for the small jaws as they grow smaller, and the result of that is that they come in too close.

In regard to the third molar, I do not know whether you agree with me or not, but I know and can prove the inheritance of acquired defects. That is entirely antagonistic to Weisman's theory, but I have demonstrated it over and over again in this evolution of extracting the third molar. Take a family and commence to extract the first permanent molar at the present time; keep that up for a number of generations, and what is the result? You are producing just the conditions that Dr. Faught in his paper tried to show that these men who advocate it are trying to prevent—that is, by extracting the first molar the second will come into its place. But you are doing the opposite of what you are trying to do; you are causing an arrest of development. The removal of the first molar will cause an arrest of development of the jaw. Go down into Alabama or Mississippi, and I will show you a district where every child has irregularity of the teeth. The jaws are small as a result of arrest of development, due to the extraction of the first permanent molar. They make a business of it down there. Go to England and I will show you that arrest of development is due to the extraction of the first permanent molar, which they think is the proper thing to do. There is no country on earth where they have such irregularity and such decay of the teeth as in England.

What shall we do? We must preserve the first permanent molar. If the pulp is exposed or dead, I would treat the roots of that tooth and put on a gold crown. I would keep that first permanent molar in the jaw. If you sacrifice the third molar, which nature is trying to do, you are only helping it along. It is not that it is there for some purpose, but because in our evolution that tooth cannot get out of the way; it cannot pass, so as to have a proper number of teeth in the jaw.

Dr. Hertig:—I am a firm believer in the law of cause and effect and inheritance. I am also a firm believer that that third molar was not put there in vain. It was put there for a purpose. I believe now, that as long as a human being has a tooth or a toe-nail, he will have that third molar, notwithstanding some effort of nature indicating a desire to do away with it. Modern photography has done a great deal toward establishing types and establishing means by which we can recognize those types. But if you will take pains to look through the picture galleries illustrating the famous beauties, both masculine and feminine, of ages gone, you will find that those people are materially deficient in one very prominent thing which exists in America to-day; that is in the lower jaw. I have heard a physiologist say that in those times the highest type of beauty was the sloping chin. During the Spanish-American war this aid of photography was brought into very great prominence. You had pictures in groups of the flower of our country, of the young men who represented the typical youth of this civilized land to-day, and what did you see? On every hand we saw that lower jaw firmly marked and developed, a clean-cut outline of countenance indicating determination and courage and typicaly characteristic of the Americans; a lower jaw and a chin beyond. And painting of the soldiers during the Revolutionary war, with their three-cornered hats and cues, show to advantage that sloping chin which was a mark of beauty in those days. And I firmly believe that in America, to say nothing of other countries, there is an evolution which is regenerative instead of degenerative, and a lower jaw is more characteristic in our country to-day than it ever was.

Dr. Talbot:—While it is barely possible that the gentleman who has just spoken may be correct so far as the external appearance of the face is concerned, if he will study the American negro for the last twenty-five or fifty years, he will see that he has plenty of material there to study the evolution of the jaws and brain. The mixture of races, the change of climate and soil, have evoluted the negro along the lines I have called your attention to, and it would be very foolish for me to spend my time coming down here and talking, without I knew what I was talking about. I have made plenty of measurements on the jaws of the negro, taking the more natural, that is, I mean, the ordinary negro of the south, and comparing him with those of New York, Philadelphia, Boston and Chicago. I have found that by dropping a perpendicular line from the superior orbital foramen to a base extending from the external auditory meatus to the nasal wing, that within one hundred years, instead of the jaws protruding outside of that line, they protrude standing on that line or inside of that line. I cannot tell you the figures, but if any of you will take the time to examine my work on the irregularities of the teeth, statistics are given there, and that is enough to show the law of evolution that I have called your attention to. While the negro originally had his full set of teeth, if you will examine the jaws of the negro on the farm at the present time you will find that many of them have lost that third molar. You will find that instead of their being a long-headed race with a protruding jaw, they have become a race more like our own people, with receding jaw. It would take me an hour to explain this evolution, which I have worked out myself, but in these few minutes I have explained to you its theory and the facts that you can study for yourself.

Dr Faught:—I have nothing to add to the paper but to say that I have been very much pleased with the discussion that it has raised, and gratified and grateful to the ladies and gentlemen who have remained to hear it at this late hour.

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## SOME THINGS WE EXPECT OF THE YOUNG MEN OF OUR PROFESSION.*

### DISCUSSION.

Dr. J. A. Libbey:—I agree with the essayist in every point, so far as the first of his paper is concerned. The work that has been done in the past thirty years is marvelous, but that work is not completed, and it remains for the younger men of the profession, to whom this paper is more especially addressed, to carry on the work that has been started.

Dr. Palmer speaks of the glaring, conspicuous gold centrals, laterals and canines, the crowning of which has become so general. It is astonishing the number of these people we see, and it is not always the ignorant class of people, I am sorry to say. As I pass along the streets in our own city here I can find professional men with glaring gold crowns on the anterior teeth, and I do not believe I have to go out of this audience to find caps of that kind. Now, gentlemen, and especially the younger men of our profession, if any of you have a gold crown in the anterior part of your mouth, get some of your brother practitioners to put something else in there. There is certainly nothing esthetic or natural about it. It is a disgrace to the profession to apply these crowns, because there is nothing natural in any way about them, and in a profession like ours, in all that we do there should be some art. We should try to disguise our work instead of trying to show it.

I remember one case in particular that I want to call attention to in this line. The gentleman is in this room who came to me for advice. Just home from college, starting in the profession, he felt particularly fortunate that he had gotten a patient. But the patient insisted on a gold crown on a lateral incisor. He tried to advise her out of the idea of it, but she was determined. He put her off and came over to see me. Said he, "What will I do? I do not want to make it, but I do need the money. I cannot afford to let the case go." Says I, "Don't do it. If you take my advice you will thank me for it later." I saw him a few days after with smiles on his face, and he said that when he went back and postitively refused to do it, she made an appointment and let him do as he thought best. There are plenty of cases just like that.

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*For paper see page 596 current issue.

I now come to what I consider the principal part of Dr. Palmer's paper, and particularly the part of it where he alludes to Dr. F. Milton Smith on the matter of immediate root-filling. Now I never met Dr. Smith. I have read his papers and have heard his views frequently. I never heard him express himself on this subject, but I believe his experience is the same as mine, that the last of all teeth that he would fill immediately are the very ones that Dr. Guilford and Dr. Palmer in his paper here to-day say they would fill immediately.

### CASES IN PRACTICE.

Before I go any farther I will state one or two cases. One was a young lady who was attending a school of oratory in New York city. She had a tooth filled there, a central incisor, almost an exposed pulp. The pulp died under the filling. She came to me with her lip puffed out and the filling loose. I opened into the pulp chamber and there was a free flow of pus, which gave her relief at once. This was Monday. She said, "Doctor, do you think you can get this cured up so I can leave Thursday?" I said I thought I could make her comfortable at least, so she could leave then. I placed the rubber dam on the tooth, and on the adjacent teeth to give me working room. After the flow of pus there followed a slight hemorrhage. I worked for fully an hour, until I had, as I believed, thoroughly cleansed that canal and filled it at that sitting. On Wednesday I malleted a gold filling into that tooth and restored the corner which was broken away. Two years after that I saw her and she came in just to say that she had not had one particle of trouble with that tooth since I filled it. That is only one of many cases that I could cite along that line.

Now why, if in other matters we can have antiseptic surgery, can we not have it in the simple matter of cleansing a putrescent pulp canal? The question is whether you are going to continually treat and treat a tooth and have to decide the proper time to fill a canal. The time to fill the canal of a tooth is when you get it as thoroughly cleansed out as you think you can possibly do. You can do that the first sitting if you can get to the apex of the canal, as well as you can after you treat it three months, and with a great deal more certainty of not getting into trouble. If there is a fistulous opening on the gum, after thorough filling the canal and pumping your remedies through, I do not see the use of treating that any longer, because if you can pass your remedy through and that does not cure it, you cannot cure it through the canal and must go to the outside. You might as well fill it then and there.

Now, on the question of a recently devitalized pulp, whether by arsenic or pulp extirpation, by removing the pulp and tissue as thoroughly as possible, you naturaly will try to remove all tissue and enlarge the canal as much as you can. Now I want to be understood clearly as saying that it is those canals that I can get into and reach that I have reference to. Of course, some of them are quite crooked or have a bend in them, but I am alluding to canals that can be filled to a certainty. After you extract your pulp you remove all the tissue you possibly can, and you usually succeed in removing all the tissue except at the very point where you want to fill and the only point where it is necessary to fill. I do not care whether a canal is filled or not if I seal up the apex, and you have very little assurance in extracting a pulp that you have thoroughly cleared away all the tissue from and near the apex. I do not believe that there are fifty per cent. of the canals of that kind that the ten best operators in this room can fill perfectly to the very apex.

### ANOTHER CASE IN PRACTICE.

I want to cite another case. This is not immediate root filling. A gentleman came into my office seven or eight years ago and said he was recommended to me by his dentist whom he had had for years. Said he, "I do not feel like telling you his name." Said I, "I don't want to know it. What are the circumstances?" Said he, "He has been treating a tooth for me for about three months, and the longer he treats it the sorer it gets. I cannot use it at all, and I have got tired of it. I wanted him to extract it and he would not do it. I became desperate to-day and told him I would not submit to this treatment any longer, and it was either he would extract it or I would go to some one else." The doctor had heard a discussion a short time before in the local society on this subject where I stood alone, and he said, "I know a man in this town who will fill that tooth at once for you," and he gave him my name. "Now," he says, "I have come to you by that gentleman's recommendation, and I told him I was coming and settled my bill with him. Now I want to be your patient and I want you to fill that tooth." Under the circumstances I was a little nettled, I will admit. I went to work on that tooth, examined it thoroughly and came to the conclusion that the only trouble was that it had been treated with carbolic acid until there was an irritation there that nothing would cure but rest, and he could rest just as well with the tooth filled as without it. I filled it at that sitting. I told him that I expected him to have some irritation for the next twenty-four hours, and may be a little longer, and prescribed local applications in case he did. I did not see the gentleman again for three weeks. He came in one day and said, "I wanted to come back the next day and whip you; but it acted just as you told me it would, and I concluded I would put it off a day or two longer, and then we would have a good time if this kept up. But," said he, "now I can eat on it and I am perfectly well."

There was a tooth that was over-treated. I believe if that tooth had been filled at the first sitting it would have saved all that trouble.

There are teeth that you cannot treat through the canal. If the pericementum is affected you cannot treat it through the canal. If it is severely affected you might as well fill it and the next thing is local amputation. Filling roots immediately does not cure them. Judgment must be used in these cases. I want to repeat that the class of teeth that are likely to give trouble.

perhaps not in one year or two years, but in time, are those that are filled with immediately extracted pulp.

Be thorough in every part of the work. It is just as necessary for thoroughness in that operation as it is in any other operation, and with careful, thorough work, thoroughly sterilized canals, thoroughly cleansed, I say fill them—especially the kind the other fellow does not believe in. I do not have anything like the trouble I did in former years with having people running to me with appointments and having to give certain hours in the day to treating a long list of pulpless teeth. It is very exceptional where I treat a tooth more than two or three times, except in cases of recently extracted pulp.

A MEMBER:—Do you mean a recently devitalized pulp?

DR. LIBBEY:—I mean that the recently devitalized pulp is the kind that we are not to immediately fill.

I would like to take up the matter of prophylaxis, but I feel that I have taken all the time, and more, that I should in the discussion of the paper, but I want to say that I heartily agree with everything that the writer has alluded to in Dr. Smith's work on prophylaxis.

DR. A. G. RINEHART:—With regard to the practice of young men placing crowns on oral teeth, I do not believe that there are any class of men or any set of men that can make a fixed rule for every man to follow. There are cases, in my opinion, where a gold crown is justifiable. Of course, those cases are rare.

With regard to Dr. Libbey's remarks on the subject of root filling, I cannot say that I entirely agree with him, and never did, although I have filled many roots immediately and have had very good success with them. It enables you to get through with a great deal of work, but sometimes you have dire disaster. I suppose I am one of the gentlemen who do not fill the root to the apex.

I had the pleasure to-day—I do not know how it will be next week—of filling four roots for a physician. I saw them yesterday for the first time. They were filled with putrescent matter. I cleansed them as well as I could and told him that was an immediate root-filling operation. "Well," he said, "that is the most unsurgical work I ever heard of, speaking from my knowledge as a surgeon."

There is one thing I wish to say, and that is that roots can be filled, I have no doubt. Dr. Libbey was an able advocate of that as far back as 1883. But a surgeon would not amputate a limb and inclose it without placing in it a drainage tube.

Dr. O. L. Hertig:—With regard to instructions to the young man starting out in the practice, great care should be used. The young mind is venturesome, ready to do and dare, enthusiastic. He is liable to go astray. What the young man needs more than anything else is some one competent to lay down to him a conservative line of practice and to do his experimenting very cautiously.

In regard to immediate root-filling, I am against it as a practice. There are cases where one can do it and do it well, with advantage to his patient, but they are very rare. I can point to as many successes where roots were not filled as where they were filled immediately. A man with years of experience can choose his cases and send his patient away with a whole vocabulary of praise for him. The thing for a young man to do is to follow a conservative line of practice.

Dr. C. H. Land:—I may say that I have been practicing for thirty-five years and it has been my invariable practice to fill immediately in all healthy tissues after pulps are destroyed. The sooner the roots are filled the better, if it is in forty-eight hours, because until germs have formed we will seldom have trouble. Where they have formed and there is some gas to escape, your chances for trouble have increased tenfold. If you give nature a chance to rebound from this irritation, cleanse them thoroughly, mechanically and cork them up, and uncork them as soon as you find trouble coming. You will have no trouble coming unless it is a tooth that no man can fill. Fill it temporarily and let it rest two or three weeks to be sure that you are right, and you will never have any more trouble with that tooth.

Dr. Palmer:—I am a little sorry that no one has seen fit to take up the subject of prevention instead of cure, especially as I have just been to Dr. D. D. Smith's son-in-law whom I hoped would talk upon the subject somewhat. I think that is the one subject in my paper that the younger men ought to pay especial attention to. The time is coming, and it is in the very near future, when the young men coming into our profession are going to know a great deal more about general matters than most of us did when we went into the profession. The requirements are being made stricter and stricter and the young man who in the near future enters the profession will have to know things we knew nothing of. And in this one thing particularly I have a strong conviction that he must be thoroughly posted.

I never did agree with my friend Dr. Libbey, and he has not said anything more to-day to make me agree with him than he ever did. Nor do I think he has rightly understood my friend, Dr. Smith. Dr. Smith makes no distinctions between the different conditions of the tooth, provided the tooth is not so sore but that he can operate on it, if he can get it dry and can get his medicine through the apex. Those are the two things he insists on. And in that I guess Dr. Libbey does not quite agree with him. Dr. Smith always expects some soreness from the immediate filling of a root—that is, a root with an abscess at the root—and tells his patient that he may expect some degree of soreness, as Dr. Libbey did in one case. He does not agree with Dr. Libbey in the immediate removal of the pulp. In that I agree with Dr. Smith. If we can remove the pulp surgically at any time, and know that we have taken the pulp out—and in most such cases I know that I have taken it out of the extreme end of the root—we can fill that immediately and not expect to have any trouble. I agree with Dr. Land that there are no germs present in a fresh wound and nature will heal that by first intention. But as Dr. Rinehart said, from the standpoint of a surgeon I cannot conceive how from the immediate filling of a tooth, no matter how thoroughly cleansed, we can reasonably expect to have good results. It does give good results in the hands of some, but in the hands of the large majority it does not give good results. I have gone home from a personal interview with my friend, Dr. Smith, and I have been enthused and filled them immediately—and I have regretted it. It is barely possible that I have not been as careful as two or three have been, but I do know that in cases where I have been using the utmost care, where I have got the roots thoroughly dry, where I have got entirely to the apex, and have filled them, and subsequently when they were extracted, cut them open and could see that they had been filled to the ends of the canal, I have had serious trouble. And until I can be satisfied that I am not going to have serious trouble I cannot agree with that form of treatment.

I do not agree with Dr. Rinehart on the gold crown business. I do not believe there is any possible occasion for putting a gold crown on any one of the six front teeth.

In closing I want to say that it has been my desire especially to bring to the young man the fact that in many of these things, strive as hard as we may, we have not reached satisfactory conclusions. And the time is ripe for better work to be done, surer work, work that we can rely on.

# SUGGESTIONS

## ROOT FILLING.

**W. F. Litch, Philadelphia.**

My favorite root filling is gutta-percha, and where I do fill roots immediately after the removal of the pulp, as is sometimes necessary, I find it an excellent plan to carry on a probe a small portion of powdered iodoform as near as possible to the root apex and then pack the gutta-percha on that. Iodoform is, clinically, antiseptic as well as anæsthetic, and hence is an excellent dressing for the stump of a removed pulp. The advantage of applying the iodoform before introducing the gutta-percha, rather than with it, is that if mixed with gutta-percha and heated the iodoform is likely to be decomposed and some of its good qualities impaired.—*Extract Dental Brief.*

## A NOTE OF WARNING.

**W. A. Knowles.**

I noticed that my Ainsworth rubber dam punch was rusty, and I caused it to be thoroughly cleansed and well oiled before again putting it away. In a day or so the same condition was again noticed, and the nickel-plated portion seemed to have lost some lustre. The cutting point, disk table and spring were all coated with rust. It was again placed in order and once more thoroughly oiled, when it was replaced in its proper drawer.

I inferred that some of the bichloride of mercury solution must have gotten upon it in the former cleansing. To my surprise, the next time I inspected it, it was in a worse condition than on any previous occasion. There was nothing in the drawer which might act as a cause, with the exception of the rubber dam. My suspicion was aroused, and I selected a couple of bright burs, wrapping them in a piece of the rubber. In the course of a couple of hours I unwrapped the rubber, examined the burs and found them to be badly rusted.

The rusting is caused by some substance used in the manufacture of the rubber dam, and, whatever it is, it also acts on the inside of the cover of the tin box, corroding and rusting it and even eating into the tissue paper which covers the roll of rubber. Upon replacing the rubber in the tin box the Ainsworth punch remained bright and clean.—*Gazette.*

## TO BUR OFF THE END OF ROOT.

**Garrett Newkirk, Los Angeles.**

I seldom do more than make a small opening through which I can introduce a bur of suitable form for cutting off or smoothing the end of the root, or for breaking down any diseased bone. It is better, I think, not to make a large opening. All we need is a channel for washing out the debris and then, when in an aseptic condition, the "pocket" will quickly close up.—*Gazette.*

## PREPARATION OF CAVITIES FOR PORCELAIN.

**W. A. Capon, Philadelphia.**

The preparation of a cavity for porcelain, while similar to that for gold, has one point of difference which, if not observed, will much lessen the durability of a porcelain filling, and that is the edge. Cut to have the walls perpendicular; avoid saucer-shaped cavities by squaring the bottom and thereby assisting retention. The edges of every cavity or section of tooth against which porcelain is to be placed must have square edges, or, to use the correct term, have the cavity wall as near a right angle to the surface as possible. Of course, in some cases, notably bicupsids and molars, the angle will probably have a tendency to be acute or obtuse, but in all cases have the edges sharp.—*Extract Brief.*

## TOWELS AS THEY COME FROM THE LAUNDRY.

**P. E. Clarkson.**

First, we decided to try if the ordinary linen, as we get it from the laundry, is really aseptic. Accordingly, with a pair of scissors and a pair of pliers, both absolutely sterile, we snipped a piece out of the inner folds of a towel, and lodged it with every precaution on top of some sterile glucose agar, pressing the particle gently against the surface, and replaced the sterile cotton plug in the test tube, everything having been previously sterilized except the bit of linen. Then, with the same care, we cut off a bit of the fringe of the same towel (this towel had been lying in the locker a week or more, but never used). Of this we made a stab in some agar medium, pressing it with a sterile needle down to the bottom of the test tube, so that it would be away from oxygen. The two tubes were placed in the incubator and watched daily, but even at the end of the seventh day there was no sign of any growth whatever. This, we are pleased to think, goes to prove that we can depend upon our laundry really being sterile, as germs of any kind had every chance to develop if they were present—*Dominion.*

## TAKING AN IMPRESSION WHERE THE AVEOLAR RIDGE IS SOFT IN PLACES.

**G. F. Belden, Toronto, Can.**

Just one other thing this evening, and that is taking an impression where the aveolar ridge is soft in places. Select cup as before, take full impression in compound, using the same care in pressing up at the back of the cup; when hard remove, chill and dry; opposite soft part or parts cut wax completely out, then mix some plaster as before directed, placing in enough to fill up portion cut away, and a little spread thinly over the rest of the impression. Insert quickly in the mouth, press firmly to place and opposite soft parts press gently with the finger, also having patient pull down cheeks and lips as before directed—by doing this the impression can be pushed firmly into position without shoving or displacing the soft parts, as the pressure comes on the hard parts of the mouth.

If properly manipulated, you will find when you remove it you have a beautiful impression of the jaw with very little trouble, that would otherwise be a very difficult task in the old way.—*Extract Dominion.*

## HOW TO APPLY ROOT DRESSINGS.

**W. R. Clark.**

Dr. Lewis, of Austin, Minn., was in my office the other day and noticed me trying to pick the cotton off the end of a barbed broach by which I had been carrying some oil of cloves into a root. He said: "Let me show you a thing that Dr. Searl of Owatonna put me on to." He took a smooth broach, held it a moment in the flame, touched it to a pice of beeswax, and wrapped the cotton around it. The idea is a good one. You can carry the cotton to the end of the root, give a slight rotation of the broach, and leave it there, or, holding on to the shred, you can remove it with the broach, and remove it instantly. Try it.—*Extract Cosmos.*

## SHARP INSTRUMENTS.

**W. K. Moyer, Little Falls, Minn.**

To always have sharp instruments an excellent rule to adopt is to never return an instrument to the case until it has been resharpened, and if followed a very few strokes on the stone brings the edge to almost a razor keenness, which makes its use a pleasure. This work can be done with an Arkansas stone on the lathe-head, but is not liable to be done as well, or rather is overdone by using up more of the instrument than is necessary at each resharpening.—*Extract Cosmos.*

## TO FACILITATE PLACING THE DAM.

**R. E. Sparks, Kingston, Can.**

To facilitate the passage of rubber dam between teeth, when the latter are close together: When ready to adjust, smear a little glycerine over the holes, on the side of dam to pass over the teeth. This answers instead of soap, recommended for the purpose, and is much less objectionable to the taste if it should come in contact with the patient's tongue.—*Dominion.*

## FILLING SMALL ROUND CAVITIES WITH GOLD.

**R. E. Sparks, Kingston, Can.**

Take a third sheet of No. 5 non-cohesive gold foil, folded into a very narrow ribbon, and insert one end into the cavity. With a hand-pressure plugger catch the ribbon far enough from the end just introduced to form a fold long enough to reach to the bottom of the cavity, while the loop of the fold extends slightly beyond the orifice. Continue this process until the cavity is a little more than full. Then condense and finish as in any ordinary case. If the cavity be extraordinarily deep for its size, fill to, say, one-half its depth and condense. Use this as the floor of the cavity, and proceed as above described. Non-cohesive gold spreads upon pressure, and accommodates itself to the size and shape of the cavity without balling, as is the case with cohesive. Besides, such a cavity may be filled in much less time with the former than with the latter.—*Dominion.*

## TISSUE-PAPER AS A SEPARATING MEDIUM IN VULCANITE WORK.

**J. H. Noble, Philadelphia.**

In vulcanite work cases frequently arise in which there is some difficulty in flasking the piece so that on separating the flask the plaster will not be broken.

For example, in flasking those cases in which plain teeth or blocks are fitted to rest directly on the gum, the plaster must extend to the incisive edge of those teeth so that they will remain accurately in position and not come away with the upper half of the flask.

Now, if in this case we have a high vault, even if we use a deep flask the plaster covering these teeth will extend well above the edge of the lower half of the flask.

Trim the plaster on top level with the incisive edges of the teeth. Trim it in front and at the sides nearly vertical—beveled just enough to allow the upper ring of the flask to be placed in position. Now, instead of varnishing or soaping the plaster, use tissue-paper. Take strips about half an inch wide, moisten them, and cover all the plaster, but not the wax or tin. If there be a fissure between the ring of the flask and the plaster, insert a rope made from a strip of wet tissue paper to prevent the plaster from flowing into it. Pour the upper half as usual, and when hard, separating cannot be attended with any accident. The tissue-paper is removed before packing the case.

Of course, tissue-paper as a means of separating is applicable to every case, but is especially advantageous in difficult cases and repairs in which the level of the separating surface is much higher or lower in parts than the line of division between the halves of the flask.

The tissue-paper can be placed and the upper half poured without waiting for the plaster in the lower half to set.—*Cosmos.*

## FILLING CANALS WITH OXYCHLORIDE.

**T. W. Hogue.**

In filling canals in the inferoir maxilla with oxychloride of zinc, it is a good plan to dry out the moisture with stiffened paper points, then drop into the canals the liquid, adding the powder afterwards (Mr. Matthew's plan), and then with a suitable probe working it into the roots. The liquid seems to draw in the powder, and a very good filling is effected—*Journal British Dental Association.*

## CONTOUR PORCELAIN INLAYS OR TIPS WITH WIRE-LOOP ATTACHMENT.

**W. A. Capon, Philadelphia.**

Burnish thin platinum over the surface of the natural tooth to be repaired, and fit a loop or pin of platinum wire, No. 24 gauge, to the interior of the cavity; then hold the matrix and wire in position on tooth, and apply porcelain body mixed with water and gum tragacanth. Carefully draw the combination from the tooth and fuse in furnace. This method avoids soldering. Dr. Capon used the method in the formation of a porcelain tip and corner with a loop and pin attachment for an upper central incisor.—*Cosmos.*

## PORCELAIN CROWNS.

**W. G. Crandell, Spencer, Ia.**

Where the band cannot be worn deep labio-gingivally, a very convenient method of procedure is to grind the facing concave and very thin at the gingival part, and place it over the band so that it passes beneath the gum about the depth of the band, thus reproducing the natural bulge at this point, and so be prepared for any recession of the gum that may take place in later years.

The root should now be ground down to the band and the platinum cap completed. The cap is now placed upon the root and a hole punched just opposite the canal. Platinum wire of a suitable gauge for the canal should be taken in the pin-vise and forced through the opening in the cap into the canal, the distance equaling the length of the facing. After proper grinding and fitting it should be removed and soldered to the cap, after which the wire may be excised, leaving about one-eighth of an inch protruding above the cap. We are now ready for the facing, which should match in shade the corresponding tooth on the opposite side, providing it has not been discolored by decay or medical agents.

The higher fusing the material of which the facing is composed, the stronger will be the crown and the better it will hold its color during the baking.

I much prefer fitting the facing in the mouth to obtaining a model and doing the work upon an articulator.

When the facing is properly ground, soft wax should be placed upon it, then put it in place upon the cap and with a warm instrument the two should be waxed securely together. Apply cold water, after which it should be teased from its place and invested in sump or some material equally good.

After the investment has thoroughly hardened, a sharp instrument should be used to remove the wax, this method being preferable to boiling. Now hold the investment firmly and with pliers bend the pins into contact with the post at a point as near the cap as possible. It is well at this point to flow a little fresh investment over the facing where the wax has been removed to protect it from the flame while soldering the pins to the post. After soldering, the piece should be placed in the mouth and its accuracy noted, and also the quantity of body necessary to back the facing. This is a good time to so shape the incisal edge as to give it a natural appearance.

High-fusing body the shade of the facing should be moistened with alcohol and worked well into the cracks and crevices, and the lingual form should be contoured as desired. It should now be placed in the furnace and the heat turned on until the entire mass is biscuited. After a proper cooling it should be removed and again built out until the desired contour is obtained. It is again baked until the entire mass is properly fused. Experience is the best teacher for this part of the work; the different furnaces and different bodies making the result quite variable.

The metal band should now be polished and your crown is ready to set, this procedure being the same as for Richmond crowns.—*Cosmos.*

* * *

# SOCIETY

## COMMENCEMENTS.

University of Pennsylvania, Dental Department, held its commencement June 17; graduates, 102.

College of Dentistry, University of Minnesota, commencement June 4; graduates, 34.

National University, Dental Department, commencement June 6; graduates, 8.

College of Dentistry, Western Reserve University, Cleveland, commencement June 18; graduates, 40.

University of Michigan, Dental Department, commencement, June 18; graduates, 77.

# AFTERMATH

## PERSONAL AND MISCELLANY.

Dr. George Mallet, of Defiance, O.; has located in Portsmouth, O.

Dentist Drowned.—Dr. J. G. Benjamin, Muskegon, Mich., was drowned June 1.

Died Suddenly.—Dr. D. J. Griffith, McKeesport, Pa., died suddenly June 21, at the age of 27.

Louisiana State Examining Board passed nine out of the fourteen applicants for certificates.

Married.—Dr. Allen Zimmerman, Salt Lake City, Utah, was married June 8 to Miss Ida Ostlund.

Killed by an Auto.—Dr. D. L. Bastian, Clinton Mass,. was killed in an automobile accident, June 7.

Married.—Dr. J. R. Ritson, Mount Morris, Ill., to Miss Charlotte Kingley, of Chicago, on June 13.

Springfield (Ill.) Dental Club officers elected: President, Dr. Robert Lieb; treasurer, Dr. E. A. Kartack.

Married.—Dr. E. C. Hay, Hancock, Mich., was married June 9, to Miss Agnes Phillips, of Calumet, Mich.

Married.—Dr. Martin Christensen, Oshkosh, Wis., was married June 12, to Miss Nina Bowers of the same city.

Married.—Dr. W. H. Tenney, Toledo, Ohio, was married June 17, to Miss Grace Freeman, of Tippecanoe City, O.

Identified.—"That fellow literally lives from hand to mouth." "Some srtuggling poet, I suppose?" "No; he's a dentist."

Minnesota Examining Board, at its last examination granted certificates to fifty-one applicants out of a class of seventy-one.

Found Dead.—Dr. G. B. Shepard, Ripon, Wis., was found dead in his office June 29. Heart disease was supposed to be the cause.

DR. W. E. BLAKENEY DEAD.—Dr. Blakeney, one of the oldest dentists of New York City, died of Bright's disease June 6, aged 80 years.

SERIOUSLY BURNED.—Dr. James O. Mess, Homer, Neb., was seriously burned June 29, by the explosion of a gasoline engine in his dental office.

DR. L. E. CUSTER HONORED.—At the recent commencement of Otterbein University, Westerville, O., the degree of Master of Arts was conferred upon Dr. L. E. Custer, Dayton, O.

DEATH FROM BLOOD POISONING.—Dr. J. W. Hecker, Buffalo, N. Y., while boarding a street car, severely sprained his leg and knee. Blood poisoning set in and he died June 17.

DIED FROM EFFECTS OF CHLOROFORM.—Mrs. Green, Hamilton, Ont., died in a dentist's chair June 7, from the effects of chloroform given by a physician for the painless extraction of teeth.

AMERICAN SOCIETY OF ORTHODONTISTS.—The next meeting of this societies will be held in Buffalo, N. Y., December 30-31, '03, January 1, '04. Dr. Anna Hopkins, St. Louis, Mo., is secretary.

DENTAL BOARD APPOINTMENT.—Dr. F. E. Field, Sioux Falls, S. D., has been appointed a member of the State Board of Dental Examiners to succeed Dr. L. F. Straight whose term expired July 12.

NORWALK-SANDUSKY DENTISTS elected the following officers: President, Dr. Miller, Sandusky; vice-president, Dr. Merritt, Norwalk; secretary, Dr. Spies, Norwalk; treasurer, Dr. McDonald, Norwalk.

LOST VOICE THROUGH EXTRACTION OF A TOOTH.—Edward Kellar, Hoboken, N. J., had a molar tooth extracted by a dentist June 5 and according to accounts has not been able to speak aloud since the operation.

COLLEGE APPOINTMENT.—Dr. E. T. Loeffler, Saginaw, Mich., has been appointed to the chair of Materia Medica and Therapeutics in the Dental Department University of Michigan, and will move to Ann Arbor this fall.

HER PREFERENCE.—"Shall I administer gas before extracting your tooth?" asked the dentist. "Well," answered the fair patient from a back township, "if it doesn't cost any more I'd rather you'd give me electric light."

MUTUAL BENEFIT ASSOCIATION.—The Council Bluffs dentists have formed an association for mutual benefit with the following board of officers: President, H. S. West; vice-president, C. E. Woodbury; secretary-treasurer, R. O. Williams.

HIS PREFERENCE.—Wife—"John, I wish you would mind the baby for an hour or two. I'm going down town to have a tooth pulled." Husband (inspired)—"You mind the baby, my dear, and I'll go down town and have a couple of teeth pulled."

Northern Ohio Dental Society officers elected are: President, W. H. Fowler, Painesville; vice-president, W. T. Jackman, Cleveland; corresponding secretary, W. G. Ebersoll, Cleveland; recording secretary, C. D. Peck, Sandusky; treasurer, D. A. Allen, Toledo.

Washington State Dental Society elected the following officers: Dr. A. W. Phillips, of Seattle, president; Dr. R. A. Munroe, of Spokane, first vice-president; Dr. B. S. Scott, of Tacoma, second vice-presiednt; Dr. Appleby of Everett, treasurer; Dr. George McGregor of Seattle, secretary.

Philanthropist Dentist Dead.—Dr. E. P. Hoyt, once one of the best known dentists in New York, and who accumulated a large fortune, is dead. He retired twenty years ago and devoted his fortune to aid poor persons to recover their health in the Adirondacks. He built hospitals and churches at many points in the mountains for the purpose of furthering his object.

Massachusetts Dental Society officers elected are: President, William P. Cooke, of Boston; first vice-president, Frederick S. Belyea, of Brookline; second vice-president, John J. F. McLaughlin, of North Adams; secretary, Edgar O. Kinsman, of Cambridge; treasurer, Joseph T. Paul, of Boston; librarian, Thomas W. Clements, of Brookline; editor, Frank A. Delabarre, of Boston.

Dentist to Saxon Court.—Dr. Foster Waltz, a young dentist of Chicago, is said to have been appointed dentist to the royal court at Dresden, Saxony, made vacant by the banishment of W. O'Brien, the American who formerly held the position, in connection with the scandal aroused by the actions of Crown Princess Louise. Dr. Foster Waltz is a son of Dr. and Mrs. A. S. Waltz, of Decatur, Ill.

South Dakota Dental Society elected as president, Dr. C. E. Stutenroth, Redfield; vice-president, Dr. E. S. O'Neil, Canton; secretary, Dr. J. W. Ross, Milbank; treasurer, Dr. W. H. Jackson, Flandreau; librarian, Dr. D. St. I. Daives, Woonsocket. The president, vice-president and secretary, with the following, make up the executive committee: Dr. A. W. Fossum, and Dr. J. A. Scheuter, both of Aberdeen.

Recognition of D. D. S. Degree by American Medical Association—Dentists who hold the degree of D. D. S. from a reputable Dental College and who are members of a recognized local or state dental society, may be admitted as dental members on recommendation of the officers of the Section on Stomatology and approval by a majority vote of the Section, the names of such members to be sent to the secretary by the secretary of the Section.

Dentists Won Suit for Damages.—Mrs. Evelyn Johnson, Jamestown, N. Y., about a year or so ago, went to the dental firm of Swetland & Anderson to have her teeth extracted. Dr. Anderson, of the firm, administered gas, propped her mouth open in the usual way and proceeded with the operation. There were several teeth. The last dropped in her throat and it was supposed lodged in her throat. The prop also disappeared. Mrs. Johnson claimed the tooth and prop lodged in her throat and did a large amount of physical injury. She accordingly brought an action against the firm for damages. The matter was referred to Hon. C. D. Davis, of Salamanca and that gentleman, after taking several volumes of testimony, has at last reached the conclusion that the dentist was blameless and that Mrs. Johnson cannot recover. He also finds that the tooth she presented in court was not the tooth that was lost.

PHILADELPHIA DENTISTS EASY.—A simple but nevertheless clever swindle has been successfully worked among the members of the dental profession in different sections of Philadelphia, and a score or more victims are gradually, but surely, wakening from golden dreams of prospective $50 and $75 contracts to find that their would-be patient has failed to show up on the day appointed, and that they are out the dollar they were so kind to loan. The so-far successful "worker" of the patient doctor is a woman, and she never asks for more than a dollar, and never takes less. Her mode of operation is to enter the dentist's office and introduce herself, saying that she was recommended to him. At the conclusion of the examination she asks for an appointment and prepares to leave. Suddenly she discovers that her money is missing and proceeds to make known her loss to the doctor. Her explanation is to the effect that before leaving home she placed a sum of money on the table and that she must have brushed it off in some manner. The doctor offers her sufficient to take her home. This will not suffice, however, for she had intended doing some shopping before she went home and asks if he can't spare her a dollar.

DENTIST SUED.—One of the strangest cases in medical history, according to physicians, came to light, June 6, through an action which Joseph E. Haag, 9 years old, has brought through his guardian ad litem to recover $25,000 damages from Edward A. Crostie, a dentist in New York. The action is based on an alleged improper pulling of a tooth. As a result of the pulling of the tooth, the boy says his leg has been affected and he limps. Physicians who have examined the boy, bear out his statement. They say the physiological complications which set in after the pulling of the tooth make the case noteworthy. It has already been discussed in many medical journals. The boy, in his complaint, says that on April 23, 1902, he went to the "painless dental parlors" of Dr. Crostie and asked him to pull a tooth which ached. The dentist did as requested, but at the same time fractured the lower jaw. On the next day the boy suffered a hemorrhage and his face began to swell. Later an abscess appeared in his right leg and blood poisoning set in. This was cured, and then an abscess developed in the left shoulder. An operation performed on the boy's jaw showed the fracture of the bone had caused an abscess to form there. It was this, the doctors say, that caused the abscesses in the leg and shoulder. After months of suffering the boy was cured, but his physician says his walk will be halting for the remainder of his life.

RESOLUTION.—WHEREAS, Death has again visited us and taken from us our friend and brother, Dr. Otto Arnold, and,

WHEREAS, With his death the profession at large has lost one of its prominent and earnest advocates, whose presence was known in all its gatherings from the least to the greatest; and,

WHEREAS, In him we ever have found a member active in the interests of this Society, whose face and whose words were always gladly welcomed. Therefore be it,

*Resolved,* That we, the Columbus Dental Society, while of necessity yielding to the inevitable, deeply deplore his death; we earnestly unite with the bereaved wife and daughter in mourning his untimely loss and shall ever bear in kindest recollection the memory of our past association with him,

*Resolved,* That a copy of these resolutions be sent to the bereaved family; a record be made in the transactions of the Society and copies be sent to the Dental Journals.

A. O. ROSS,
F. R. CHAPMAN,
J. B. BEAUMAN,
*Committee.*

PATENTS RECENTLY GRANTED OF INTEREST TO DENTISTS.—727,736—Obtunding attachment for dental drills, Claude R. Basford, Healdsburg, Cal.

737,811—Dental swaging machine, Chapin F. Lauderdale, Milwaukee, Wis.

728,048—Tooth-brush, Charles A. Torrance and G. S. Stone, Talmage, Neb.

728,375—Dental vulcanizer, Charles A. Davis, Pasadena, Cal.

728,633—Dental plate, Samuel G. Supplee, New York, N. Y.

728,638—Dental cuspidor, Henry E. Weber, Canton, Ohio.

728,818—Dental manikin, Edwin P. Wright, Richmond, Va.

729,740—Stand for tooth-picks, matches, or like articles, Robert Dickson, Chicago, Ill.

730,128—Saliva ejector, James B. Jordan, Nashville, Tenn.

729,621—Dental suction plate, Ira Malone, Sapulpa, I. T.

730,040—Fountain tooth-brush, Henry C. McKinley and A. Diegel, Detroit, Mich.

730,038—Dental dam holder, Daniel Murlless, Holyoke, Mass.

730,184—Dental appliance, Ezra W. Witter, Medina, Ohio.

730,658—Dental bite-taker, David T. Huber, Des Moines, Iowa.

730,379—Circuit-controller for surgico-dental engines, Joseph S. Letord W. W. Alexander, and H. Letord, Kansas City, Mo.

730,714—Pneumatic apparatus for dentists or physicians, Paul H Stehley and J. H. Hulings, Parsons, W. Va.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

# REGULAR CONTRIBUTIONS

## THE VEIL REMOVED—A TRUE VISION OF MOUTH CONDITIONS.

BY D. D. SMITH, D. D. S., M. D., PHILADELPHIA.

There are in the human mouth to-day, as has been the condition through all the centuries, malignant factors of general infection and causes of disease, wholly unperceived and neglected.

Medical science and its allies, ancient and modern, virtually limiting the study of the mouth as an index to general systemic conditions to the tongue, and naturally looking for ultimate causes of disease to inimical foods and drinks, to so-called "malaria," to mental and physical overwork, to adverse locality, to morbid conditions of stomach, kidneys and lungs, have failed to apprehend or recognize the infection, most virulent and prolific, in the very vertibule of human life.

Dentistry. engrossed with its mechanics, and devoting its energies largely to the restoration of decayed teeth, has discovered none of the serious consequences of contagion in the mouth, neither has it suspected the fact that grave systemic disorders are directly traceable to infected states and conditions of the natural teeth. Hypothetical as these enunciations may at first appear, they will be completely verified in the light of full scientific investigation.

### TWENTY TO THIRTY SQUARE INCHES OF TOOTH-SURFACE EXPOSED IN THE HUMAN MOUTH.

To appreciate the momentous import of these conditions, we have but to consider that in the normal mouth at 8 to 20 years of age, and later, there are twenty to thirty square inches of dentate surface constantly exposed to ever-changing—often inimical—conditions, and that all tooth-surface in its natural state is bacterially infected surface. In many cases, investigation will reveal most *dangerous* infection in connecnection with the teeth.

### THE MOUTH, THE VESTIBULE OF LIFE.

To conceive of the oral cavity as the "vestibule of human life" is a simile not inappropriate, for in it all systemic and commissary supplies for nutrition, and for the maintenance of heat, are received and tested on their way to the stomach, the chief nutrient and distributing center of the general system. And not only this—it is here that the various foods, solids and liquids, incorporate with the oral secretions which are piped into the mouth from special glands, and the mass, by aid of the teeth, is subjected to a process of maceration in preparation for deglutition. Engaged with these and its other indispensable offices, the mouth is never out of service, and it may be said literally, that through lack of intelligent care, it is never in a state of true cleanliness. Solid particles from the breath, saliva, food-remains and other debris constantly deposit and accumulate on and about the teeth, and become cemented and infected, chiefly through inspissation of the acid mucus which oozes from the many glandular bodies situated just beneath its mucous surface. The air, also, which is commonly diverted through this passage-way to the lungs—especially in mouth-breathers and generally in sleep—becomes a purveyor of its poisonous emanations, depositing infection in lung-tissue and in the blood.

### COMMON MOUTH CONDITIONS, MEDIA FOR BACTERIAL CULTURE.

Necessarily the subject of such conditions, the mouth, with its large extent of dentate surface, becomes quickly infested and infected with all manner of bacterial formations, decomposing particles of food, stagnant, inspissated, septic matter from saliva, mucus and sputum, not infrequently with pus exudations from irritated and inflamed gum margins, gaseous emanations from decaying teeth and putrescent pulp tissue, salivary calculus (tartar), nicotine and the chemical toxins of decomposition which result from a mixing of mouth secretions, excretions and food-remains in a temperature constantly maintained at the *high normal of 98 degrees F.* While this may seem a formidable array, it fails to present many of the sources of infection inseparably connected with untreated teeth; and, incredible at it may appear, these conditions are found not in the lower classes alone, but in general mouth conditions in high and low-born, fastidious and boor, king and peasant.

### DROPLET INFECTION.

Respecting the state of the breath in ordinary expiration, Hermann Koninger, in the *Journal of Hygiene and Infectious Diseases,* summarizes some original experiments as follows: "The author has been able to assure himself that in an apartment where there is no appreciable current of air, a person coughing or sneezing can scatter germs to a distance of more than 22 feet. Germs are scattered through the air by means of salivary droplets. These droplets are really microscopic balloons, having a bubble of air in the center, and remain in suspense but a short time. The dissemination of droplets, with their germ-originating capabilities and tendencies, is most marked during coughing and sneezing. The more pathogenic microbes the mouth contains, the greater the danger of infection. Washing the mouth has the effect of decreasing the diphtheritic and other bacilli susceptible of being detached. Placing the hand or a handkerchief over the mouth prevents the emission of droplets charged with bacilli. During a surgical operation no one present should speak. Measures may be multiplied indefinitely for prevention in connection with this important idea of scattering infected droplets in the breath."

### MOUTH AND TEETH INFECTION A COMMON HERITAGE.

Thus it is manifest that with past and present conditions of mouth and teeth, infection in the oral cavity is a common heritage, and that none under existing regime can wholly escape its evil consequences.

### DENTAL DISEASE INCREASING IN ENGLAND.

A gleam of recognition of this fact is found in the London *Lancet* of November 15, 1902. The editor says: "The alarming increase of dental disease is beginning to attract the attention of the general public, while there are also signs that the medical profession is becoming more alive to the possibilities of dental disorders being important factors in the production of certain general diseases. Dental caries is the most prevalent disease of the human race. There is little doubt that a large number of children suffer from impoverished nutrition due solely to neglected conditions of the mouth."

### UREMIA CAUSED BY PYORRHEA.

If by "dental disorders" the *Lancet* means dental caries, which it styles "the most prevalent disease of the human race," it may be confidently questioned whether dental caries alone should be regarded "an important factor in the production of certain general diseases." Pyorrhea alveolaris, a disease due wholly to the teeth, is unquestionably productive of some general diseases. Observations lead to the confident belief that the kidneys are the organs commonly affected by the products of this particular pyemic contagion. The teaching that pyorrhea alveolaris results from uremic poisoning is an error quite prevalent, and should be corrected. While uremia and pyorrhea may be and often are associated, the presence of urea in the blood is *not* a cause of pyorrhea, but the converse of this proposition—alveolar pyorrhea is a cause of uremia—is the statement of a true pathological condition. Uremia is a *usual* result of pyorrhea, due to the perpetual ingestion of mouth toxins—pus and other effete products—which are constantly and inevitably taken into the stomach because this inflammatory condition is in the mouth. Alveolar pyorrhea is never of systemic origin; it is wholly local and caused by stagnant, septic matter on the teeth. These irritating toxins induce inflammation of the tissues at the gum margins about the affected teeth, and as the inflammatory products increase the gums, pericementum and alveolar tissue become involved and withdraw more and more from sections of the teeth, thus forming pockets in the alveolar process beside the roots, which increase the infection and hasten loosening of the teeth. Pyorrhea is readily amenable to intelligent treatment when it is instituted before the inflammatory process has progressed to hopeless destruction of the supporting alveolar tissue. An edentulous mouth is never the subject of pyorrhea, and whenever the disease is developed, extraction of the affected teeth always results in speedy and complete cure. In this is clearly manifest the *verity* of the local origin of this disease.

### IMPERFECT DIGESTION NOT DUE TO CARIES.

If my interpretation of the *Lancet's* article referred to is correct, it would imply that "children suffer from impoverished nutrition" because of caries and inability to masticate food, and this presentation should be received with caution. It is not alone, "the increasing prevalence of dental caries" that is the cause of systemic disease in children, neither is the prevalence of caries a factor except as it contributes to general mouth infection. The facts are, that with modern culinary methods neither perfect tooth mastication nor mouth insalivation is an indispensable part of the digestive process. It is true that free and comfortable mastication of food contributes greatly to the *pleasures* of taste and ingestion, and to that extent favors stomach digestion, but mastication is an office which can be delegated, as is often done, not only without injury but with decided benefit. It is equally true that for the maceration of foods in the mouth, water and other customary drinks may be substituted for saliva without appreciable detriment, and in many conditions of the mouth and teeth with advantage to the stomach. That saliva converts starch into sugar in the initial stages of digestion might have been a matter of more consideration before sugar entered so largely into foods and drinks as at present. Now, with a constant over supply of saccharines, saliva, frequently vitiated and infected as it is poured into the mouth a direct secretion by the salivary glands, might in many states of the mouth give place to water in some form, with advantage.

### WATER NECESSARY TO DIGESTION.

Water should be regarded not simply as a food adjuvant and a diluent to the circulation, it is an integral part of nutrition; as necessary to digestion as to tissue replacement or to the maintenance of life.

### CHANGE IN STUDY OF FOODS DEMANDED.

In this connection it seems reasonable to predict that the student of dietetics must soon broaden his field from the consideration of foods in their analytical ultimates, to embrace other and perhaps more important matters in connection with their structural compounds. The demands of tissue-building are such that we seem compelled to accept that the real value of typical foods is dependent not so much on their ultimate chemical elements as on the value of the substance in its entirety, before the breaking up of the vitalized, aqueous, compound cells.

### IN CONFLICT WITH ACCEPTED VIEWS.

While fully aware that this may seem in conflict with the accepted physiology of digestion, it is a theory which is found to be in accord with every-day clinical experience and with conditions yet to be considered. The indifference of the stomach to mouth mastication and insalivation is clearly expressed in numberless cases of edentulous mouths, in which the processes of digestion and assimilation go forward regardless of mastication, and with no apparent obstruction or derangement; and the remaining oral tissues in all cases will be found in perfect condition of health.

### WHAT WILL BE DEMONSTRATED.

It will yet be demonstrated that the real cause of general disease emanating from the mouth and teeth is due, not so much to dental caries or disability of mastication as to the constant and perpetual mingling of septic matter from the teeth with foods and drinks and to the inhalation of the toxic emanations from the persistent and abiding infection in mouths containing natural teeth.

### WHEN INFECTION BEGINS.

"When does mouth infection due to the teeth begin?" It begins with the eruption of the deciduous set and continues with increasing gravity through the period of shedding the temporary and erupting the permanent ones and thence on so long as the natural teeth are retained in the mouth; the most critical time being that of childhood and early youth, a period in which the mouth under present regime is wholly without intelligent care.

### CHILDREN'S MOUTHS CRUCIBLES.

Children's mouths are frequently veritable crucibles in which are generated chemical agents and compounds highly detrimental to the teeth themselves and not less to the general health of the child. Vitiated salivary and mucus secretions, bacterial placques upon the teeth, decay, retained food-particles and saccharines, breaths loaded with emanations from stagnant septic matter, all at the high temperature of 98° F., *insinuate into the circulation a constantly increasing infection,* to find expression later in life in diverse pathological conditions, and often in chronic and fatal disorders. It may appear, as it commonly does, in stomach or kidneys, in lungs or nervous system, in heart, brain or skin, in any organ or tissue to which mouth toxins are directly or indirectly conveyed.

### EXPERIENCE WITH THE "PROPHYLAXIS TREATMENT."

Experience has shown that it is not only possible but entirely practicable by means of intelligent "prophylaxis treatment," to arrest and prevent caries in the teeth of children, and at the same time keep the mouth in a good state of asepsis. An important auxiliary benefit resulting from this treatment is in its educating the child to intelligent self-care of the mouth, and in the relief it affords from the terrible dread and fear of the operations of dentistry, a present serious obstacle to proper professional care in all cases.

Recognition of this by physicians, to whose care children are naturally committed, and corresponding advice from them to parents or guardians would result in incalculable benefit to the teeth and not less to the general health of childhood.

### TEETH NOT INFLUENCED BY SPECIAL FEEDING.

The suggestion frequently made, that the dental profession can or should assume to control the diet of infants and children for the production of good teeth is an absurdity. If the dental or medical pediatrist had the power he would do well to give to every mother and every child a plentiful supply of healthful foods—cereals, vegetables, fruits, nuts and meats—and thus and thus only, through dietetic means, lay the foundation for good teeth. No special foods or methods of feeding will accomplish this end. Foods that make good bone. muscle nerve and other tissue, will likewise make good teeth.

### INSUFFICIENT TO STOP CONTAGION.

In an endeavor to limit contagion, medical interposition very properly condemns expectorating in public conveyances, on floors, sidewalks and in all frequented places. Beards, kissing, and even the shaking of hands, are under condemnation by the scientist.

Dr. J. H. Hirsch, of Chicago, in finely spun theory, says: "The most delicate perfume upon the hand is neither a sign of freedom from germs nor a protection, and the most refined are not free from diseases of the lungs or throat which are rapidly spread by touching the hand that has handled the handkerchief of one afflicted with a cold, catarrh, or consumption. These diseases claim more than one-seventh of all the deaths. Our street-cars carry signs which forbid expectorating in them, yet passengers in these same cars may hold the hand before the mouth when they cough and cover it with germs to infect a thousand people."

## MOUTHS SPREAD DISEASE.

In *American Medicine,* October 25, 1902, under "Sanitary Telephones," we read: "It is claimed that in speaking into a telephone receiver held within an inch or two of the mouth, irregular sprays of saliva" (droplets) "may be ejected into the mouth-piece and the drying up and subsequent blowing about of particles so ejected might cause infection." Under the heading, "Microbes in Letters" this appears: "In nine cases out of ten the envelope containing the letter is licked by the sender, as is also the stamp. Infection, therefore, may easily lurk here." If the theories of bacteriologists are correct, the beard and moustache are filled with microbes, hence the command has gone forth in Germany that surgeons must shave. Would if not have been better if this order had compelled the wearing of perfect mouth-masks?

## THERE SHOULD BE WARNINGS AGAINST MOUTH INFECTION.

Volumes might be compiled from articles relating to poisoning of atmosphere in the street-cars, in school-rooms, churches, public halls, theaters, bed-chambers and homes, to which might well be added an emphatic protest against the use of a common communion-cup; but nowhere can there be found a sentence in regard to the malignant mouth conditions encountered everywhere, and so the oral cavity, often wholly without care, is left to infect the individual, and to pour forth a comet-like train of contagion in every expectoration, every cough and every exhalation.

Although little considered, the danger attending droplet infection from ordinary septic states of the mouth, especially in close apartments, in the sick-room, and *even in common conversation,* may well be shunned and evaded.

## SEPTIC TEETH THE CAUSE.

Where shall we look for the true origin of the dread infection lurking in sputum, in letters, telephone receivers, on lips, in beards, and in many other places of concealment? It is largely due to septic conditions of the natural teeth, and to the stagnant toxins persistenly on and about them in the oral cavity.

### THE PROOF.

Scientific laboratory experiments in proof of this are wholly unnecessary. Every one can apply the demonstration. Passing the finger over the labial or buccal surfaces of the teeth on rising in the morning, drawing unwaxed floss-silk between the teeth, or even breathing upon the hand and applying it to the nostrils, will quickly convince the most skeptical of the presence of the abounding infection in the mouth. Further evidence may be obtained by securing but the smallest particle of decomposing matter from a decayed tooth; through opening into a pulp-cavity containing putrescent tissue; in gathering a minute quantity of the septic matter often mixed with pus exudation from about and between the larger teeth, as the molars, and most convincingly, through examination of a freshly-extracted tooth.

### LOSS OF SEPTIC TEETH NOT AN UNMIXED EVIL.

Further and seemingly undisputable proof of the infection due to the natural teeth and what they gather to themselves in the mouth, may be found in the almost universal improvement in general health conditions following the loss of the teeth. Complete recovery from ordinary diseases of the digestive tract, from many skin troubles and numerous nervous disorders, is a usual result of the extraction of all teeth from a given mouth. The intimate relationship of mouth infection and morbid states and general pathological conditions is clear, and the predication of it demands special emphasis and elaboration.

### FROM A LEADING MEDICAL JOURNAL.

An editorial in a recent number of *American Medicine* reads in part as follows: *"There are ten millions of them!"* "Everybody knows about them, the disease they spread, their horrors, their worse than loathsomeness! Every one endures, submits in silence, feels himself powerless to remedy. Boards of health cannot, or think they cannot, attack the evil; or they are too busy with things they think are more important. And so the filthy country and village water-closet persists from generation to generation. The intellectual philanthropist is yet to come who shall undertake one of the greatest reforms of the world."

### THE GREATEST SANITARY REFORM.

The greatest sanitary reform of the world is not the abolition of the village closet, but it lies in the Herculean task of revolutionizing the unsanitary and infectious condition of the human mouth. Contagion and disease from the latter are a thousandfold more subtle and dangerous than from the former, for it is found not only in country and village, but in town and city—*in all places where humanity dwells.*

### TEETH AND MOUTH CONDITIONS *vs.* TUBERCULOSIS.

Tuberculosis patients in modern practice are sent into the woods or open air. Waxham, with whose views there seems general agreement, says, "The best results are obtained from sleeping in a tent the year round, and this can be done by shifting patients about, allowing them to spend their summers in Colorado and their winters in Arizona or New Mexico," but there remains yet to be made the first consistent effort looking to ascepticizing the oral cavity, where the most pernicious factors of lung, stomach and general systematic infection are abidingly intrenched.

The unfortunate consumptive ordered into the open air for relief, is, under present regime, prevented through pernicious states of the mouth and teeth, from obtaining even one uncontaminated inhalation of the pure air sought.

In addition to the toxins engendered amidst stagnant accumulations perpetually adherent to the teeth of consumptives, the sputum itself in appreciable quantity clings to the already infected tooth surfaces, increasing bacterial placques and multiplying bacterial cultures in the mouth. Can it be otherwise than that an endless chain of ever increasing contagion thus revolves in foods and air to blood, thence to the organs and tissues, to be deposited as initial infection or in augmentation of some pathological state already established; or it may return to the mouth in mucus or saliva, or in some inflammatory exudation to begin again its round of infection.

### SOME VIEWS OF EXPERTS.

In view of this, is it matter for wonder that a recent author, Dr. Jessie Shoup, writing for *American Medicine*, says that in consumption "The system is constantly placed on the defensive, and at no time is it able to change front and assume the offensive." And further, "We cannot eradicate this disease." Does it not seem reasonable to infer that while the present neglected conditions of the oral cavity are allowed to continue, the system of the unfortunate tuberculosis patient will neither be able "to change front" nor acquire strength to assume "the offensive?" Dr. Arthur Latham says, "The current treatment of consumption is a mere pouring in of drugs without any attempt to reach the root of the disease."

### FUNDAMENTAL AND PHYSIOLOGICAL TREATMENT.

Surely intelligent "prophylaxis treatment" for the teeth and efficient sanitary measures to prevent septic mouth conditions in children and youth, in all suspected tuberculous cases, and not less as auxiliary to other treatment in the developed disease, are worthy of most careful investigation and trial, in an endeavor to benefit humanity and to free the profession from the opprobrium of this "white plague."

### STOMACH AND KIDNEY TROUBLES AWAKENED.

What has been said of mouth infection as excitant and promotive of tuberculous conditions applies with equal emphasis to the stomach, kidneys, the nervous system, and other organs. Many forms of stomach disorders, cancer not excluded, have been awakened by this ever-present septic condition of the mouth and teeth. Renal complications also in all forms are induced and aggravated by the same favoring states in the oral cavity.

### PERNICIOUS ANEMIA.

One or two English physicians have recently made some observations respecting the effects of mouth infection on general conditions, notably Dr. William Hunter, in an article in the *Lancet*, 1900, entitled "Oral Sepsis as a Cause of Pernicious Anemia." In his hospital practice, Dr. Hunter seems to have encountered most astonishing states of the mouth, due to lamentable ignorance and neglect on the part of patients, and, as he described some of them to inexcusably wretched operations in connection with the teeth; the latter unparalleled in this country it is believed even in the worst conditions of dentistry. In these extreme cases only Dr. Hunter has recognized and rather timidly asserted the pernicious effects of mouth infection. It is not to these appallingly neglected and maltreated mouths encountered chiefly in hospital practice that we are to look for typical cases of general infection due to septic mouths, but rather to every mouth containing *unsanitarized* teeth. (The coining of the word "unsanitarized," so aply expressive of a condition of the teeth heretofore undescribed and unrecognized, is believed to be fully justified.)

### SEPTIC MOUTHS FAVOR SMALLPOX.

Susceptibility to the infection of smallpox and other zymotic diseases, it is assumed, is heightened by the favoring culture-medium in present mouth conditions. The question may yet arise whether the germ of smallpox becomes infectious until it develops culture in the mouth. If this should be accepted as an affirmation, as it possibly will be, maintenance of perfect mouth asepsis would render the system practically immune.

### A REAL DANGER IN SURGICAL OPERATIONS.

In view of the fact that every mouth with teeth in the natural untreated state is inevitably breathing out dangerously infected droplets, how puerile seems the German contention over the surgeon's beard. If, however, discussion shall develop a better understanding of the true source of beard infection, and emphasize the special dangers attending amphitheater and all surgical operations, through droplet infection from the breath of the surgeon and his attendants, it will in the end accomplish great good.

### IS THERE A REMEDY?

We are now face to face with the query, "Are these conditions remediable or must they endure?" In 1894 the author began a line of experimental investigations to determine the true source of tooth decay. Results from these experiments, carried forward on patients only, were all in harmony with the theory that caries of the teeth begins at some point on the exposed enamel surface, and that it is primarily due to the *affinity* of the ultimates of the teeth for the acids of the menstruum in which they are continuously enveloped. What seems indisputable proof of this theory is the fact that if a devitalized or pulpless tooth, such a tooth as is conceded to be the subject of more rapid decay than one with a vital pulp in the same environment, be removed from a mouth where resolution is rapidly taking place, and be placed in water, alcohol or glycerin, or simply exposed in the air, all caries in that tooth is at once arrested.

The inevtiable deduction from such an experiment is that caries of the teeth is a result of environmental conditions, and this is in agreement with general observation and clinical experience.

### WHAT HAS BEEN DEVELOPED.

Growing out of the experiments referred to and their results, I have developed a system of caring for the teeth diametrically the opposite of all former conceptions, theories, and methods of practice, and whenever the system has found typical exemplification, whether in childhood, youth, middle life, or old age, most favorable and satisfactory results have universally followed.

### PROPER MODE OF TREATMENT.

The treatment consists of enforced, radical and frequent change of environment for the teeth, and perfect sanitation for all oral conditions. Experience having demonstrated that the most careful and painstaking are unable, with the agents commonly employed—as the tooth-brush and dentifrice, tooth-pick, and dental floss, soaps, so-called germicidal washes, or other agencies—to effect this end, the plan of forcible, frequently-renewed sanitation by an experienced operator has been instituted with results as stated. In detail, the process consists of most careful and complete removal of all concretions, calcic deposits, semisolids, bacterial placques, and inspissated secretions and excretions which gather on the surfaces of the teeth, between them, or at the gum margins; to be followed by thorough polishing of all tooth surfaces by hand methods (power polishers should never be used)—not alone the more exposed labial and buccal surfaces, but the lingual, palatal, and proximal surfaces as well, using for this purpose orange-wood points in suitable holders, charged with finely ground pumice-stone as a polishing material. Treated in this manner the teeth are placed in the most favorable condition to prevent and repel septic accumulations and deposits, and not less to aid all efforts of the patient in the direction of sanitation and cleanliness.

### SOME REMARKABLE RESULTS.

In every instance in which this treatment has been instituted for the deciduous teeth, and in many cases of adults, there has been immunity from decay, and the teeth have shown a marked change in structural composition. Alveolar development in children also has been apparently stimulated and increased to meet more fully the requirements of erupting teeth. The extreme and unnatural sensitiveness of the gums, attended with purple color, congestion, and tendency to bleed, has in every instance been fully overcome, and there has been quick return to the normal condition of low-grade sensibility, and to the natural pink tint of the gums, attended with typical striations and beautiful festoons. It is also apparent that the tissues of the teeth themselves, especially the dentin and enamel, probably through stimulation of the vital forces of the pulp due to this treatment, begin a surprising change for the better; a change which is first and specially noted in improved *color* and general appearance. Dull, opaque tooth-substance, often loaded with an offensive "old-ivory" pigment, is transformed into clear, translucent tissue, the teeth assuming the appearance of living organs and having an impressive individuality.

### FREQUENT CHANGE OF ENVIRONMENT NECESSARY.

For seven years the revelations and the benefits of this treatment, hitherto unknown, have been a constant source of surprise and delight, and with ever-increasing emphasis are demonstrating the necessity for this thorough and frequent *change of environment* for *all* teeth and *all* oral conditions.

### PREVENTS INFECTION.

To arrest or to prevent inflammatory processes in the mouth is to arrest and prevent resorption of pus exudations and other effete products of mouth inflammations, which of necessity are carried from the mouth directly into the digestive tract. The one and only method of prevention and relief from this source of infection is as stated—forcible, complete and frequent removal of the stagnant irritants and toxins which perpetually recur on and between the teeth and along the gum margins. Maintained at intervals of about a month apart this treatment insures the immediate lessening and ultimate arrest of all inflammations and inflammatory exudations and products from the oral tissues.

### EFFECT UPON THE BREATH.

Another important beneficial result of this treatment is seen in the unloading of the breath of its malodors and consequently of its often malignant infection, conditions frequently but erroneously attributed to the stomach.

### CLINICAL EXPERIENCE.

Clinical experience adds its testimony in substantiation of all this. Of the whole number of cases under this monthly "prophylaxis treatment" *all have shown some phase or state of general health improvement.*

### MALAISE.

The very common condition diagnosed as malaise, expressed in an indifferent appetite, coated tongue and sallow skin, has in every instance in from three to four months given place to clearing of the tongue and skin, better assimilation of food, and apparent increase of vitality.

### "NERVOUSNESS."

Next in point of numbers may be noted cases of so-called "nervousness" in both men and women—several in a condition approaching "nervous prostration." The rapid improvement and recovery in these cases have been matters of astonishment and gratification.

### THROAT TROUBLES.

Inflammatory conditions of the throat, some of long standing, and attended with tonsilitis, with the use of topical applications only in addition to the "prophylaxis treatment," have in every case shown marked improvement; some have been cured and others are improving under the treatment.

### NERVOUS DYSPEPSIA.

One case of chronic nervous dyspepsia in an inveterate smoker, complicated with violent paroxysms of acute stomatis—gums flabby and at times swollen, even above the occlusal surfaces of the teeth, rendering mastication extremely difficult and painful, tongue furrowed and thickly and continuously coated, breath offensive in the extreme—accepted the "prophylaxis treatment" with considerable hesitation. The result, after eighteen months' treatment, was complete restoration to normal of mouth tissues, cure of the dyspepsia, and return to full general health conditions.

### STOMATITIS AND ALVEOLAR PYORRHEA.

There have been two notable cases of alveolar pyorrhea in men treated, one with pus exudations from the gum margins averaging half a teaspoonful in twenty-four hours, with disagreeable catarrhal inflammation of the throat, extremely offensive breath, sallow skin, and complete loss of appetite. In this case the patient stated that a diagnosis of diabetes had been made and the usual restricted diet ordered. The other case was complicated with violent stomatitis involving the whole upper and lower jaw on the left side, patient in a state of extreme nervous irritability, mastication painful and difficult, food assimilation imperfect, sallow skin, coated tongue and offensive breath. Both of these cases made a complete recovery, both as to pyorrhea and general mouth conditions and the restoration of the general health.

### MOUTH INFECTION AND TONSILITIS.

Let me detail a most interesting case of long standing tonsilitis, complicated with chronic inflammation of the upper pharynx, the uvula and the half arches. The tonsils were greatly enlarged and all the pocketed and inflamed surfaces continuously coated with a muco-purulent discharge. There was great depression of the nervous system, irregular appetite, anxiety, frequent "grippe" colds and cough. (The lady had been subject to "spray" treatment for the throat and given general tonics.) This case has been only seven months under the "prophylaxis treatment," with topical applications to the affected surfaces only, and in that time has benefited to such a degree as to warrant a most favorable prognosis. Three other cases, having all the symptoms of tuberculous decline, were noticed and treatment instituted at the stage of beginning cough and expectoration; these have improved with less than two years of "prophylaxis treatment" to such extent that it is believed there will be no further development of the disease. Five cases of gestation, regardless of the oft-repeated prophetic warning, have been under the monthly "prophylaxis treatment" and watched with great interest. Result: The birth of five healthy children; mothers in each case made most satisfactory recovery, and that not only without proverbial "loss of a tooth for a child," *but without injury to any teeth or* tooth. Other and varied interesting conditions and cases which it is deemed unnecessary to introduce here have been greatly benefited by this "prophylaxis treatment."

### PROPER DENTISTRY, SOLE RELIEF.

It is a matter to be recognized that relief from mouth infection is to be afforded through dentistry alone. Germicides will not, they cannot, accomplish it. There must be positive and frequent removal of all septic matter from the teeth, and change in all environmental conditions which engender stagnant toxins and promote germ culture in the mouth, and general maintenance of a perfect state of asepsis for the entire oral cavity. This can be accomplished only through the most skillful manipulation of educated, intelligent dentists.

### MEDICINE MAY GREATLY AID.

*It may seem difficult to realize, but it is nevertheless true, that no greater good could come to humanity through the medical profession than the full recognition of the dangers from this insiduous, prolific, and virulent infection in the human mouth.*

### HOW MOUTH INFECTION MAY BE UNCOVERED BY THE PHYSICIAN.

The addition of a dental mouth-mirror to the pocket-case of the physician would quickly uncover astonishing lack in diagnostic acumen respecting states of the mouth, and reveal causes of tooth-decay, general mouth and breath infection, and sources of disease, as unexpected as these conditions are humiliating and dangerous. The discoveries resulting from the oral prophylaxis treatment delineated, open a most important field of diagnostic research to medicine and surgery, and greatly enhance the opportunities for scientific development in dentistry. They also present a means for greatly extending the benefits of dental service, and for making the dental profession a branch of medicine in reality, and this in its own legitimate field, the oral cavity.

### WHAT PHYSICIANS OWE TO THEMSELVES AND TO HUMANITY.

Physicians, it would seem, owe it to themselves and to the general public, consistently to urge that the sphere of dental practice be enlarged to meet the constantly recurring necessities of this most momentous phase of medical and dental science.

### RESULTS OF GENERAL ADOPTION.

General adoption of the prophylaxis treatment as outlined, would result in immediate and marked improvement to the general health and in notable increase in the average duration of human life.

### THE TRUE POSSESSIONS OF DENTISTRY.

The real undisputed possessions of the dental profession embrace the very gateway to the human system, with all the important offices attaching thereto, yet dentistry itself has so circumscribed and limited its field of operations that it has to do at present chiefly with the one disease—caries, in the crowns of teeth—and he who can the more adroitly deal with this condition is generally the most lauded.

### RESULTS OF DENTAL TEACHINGS AND PRACTICE.

Dental teachings, writings and discussions have revolved around a common center—materials and methods—until the impression is engrafted upon the general public, and the great majority of the medical profession also, that dentistry is first and chiefly the filling of a decayed tooth. Its want of standing as a profession with the community is proverbial. In every conflict the medical opinion supersedes the dental. There is practically no finality in a dentist's diagnosis or decision.

### COMBINED EFFORTS OF MEDICINE AND DENTISTRY THE HOPE FOR THE FUTURE.

It seems not too much to hope and expect, in view of the paramount importance of this subject, that in connection with other efforts which are being made in the interests of dental and medical education, there shall, in the beginning of this New Century, be instituted, in schools of medicine and dentistry alike, professorships and teachings which shall reveal, first of all, each for the benefit of the other, the true relations of medicine and dentistry—relations of kinship, homogeneity, and because of many points in common, of mutual interdependence—and that out of new and better teachnigs there shall be evolved a System of Dental Therapeutics and Practice centered, not as now, in the mechanics of dentistry, but centered rather in these most significant adjuncts to life and health—means and methods for the *betterment of human teeth* and the dethronement of Mouth Infection.

## HYGIENE OF THE ORAL CAVITY.*

BY T. S. PHILLIPS, D. D. S., SPRINGFIELD, OHIO.

The word hygiene is derived from a Greek word, and means health.

We have only to point to the elaborate directions in the Mosaic laws for the preservation of health through scrupulous attention to cleanliness.

The care and preservation of the teeth is of the greatest importance, and I believe most dentists claim this should begin with the eruption of the temporary teeth. Let us spend time instructing patients how to care for them, and if we cannot spare time, talk to them while operating, and they will catch a part of our instructions, even if we are almost killing them.

It is the province of hygiene to seek out and determine the cause of disease and to formulate rules of prevention and cure.

Do we all pay a conscientious regard to cleanliness? Do we sterilize our instruments and our materials as we should?

Our patients have a right to the best service we can render to them under the most favorable conditions. It often occurs upon the examination of a patient, that the services, perhaps of yourself or some other dentist, have proved of

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***Read before the Springfield Dental Society.**

no avail in the ultimate preservation of the teeth through the lack of attention on the part of the patient to the proper hygienic care of the mouth. It is too true that a certain portion of mankind appears to be incapable of appreciating the value of cleanliness of the oral cavity. The greater proportion of these unfortunates being those whose misery and discomfort is brought about entirely through ignorance on their part.

What a weight of responsibility rests upon the consciences of those *dentists* who see the mouths of their patients ruined, because they have not been taught the lesson of hygiene.

The common excuse of many dentists is that they cannot afford to give to the patient the time to properly instruct them, because they cannot expect for this purpose any remuneration.

No labor for a patient is more valuable, nor worth a greater price, than time given to properly impress and to teach in every detail the routine of ordinary oral hygiene. This lack of attention to the aseptic condition of the mouth is an important factor in the destruction of the dental organs, and made such a profound impression upon me in the very beginning of my practice, that I have endeavored to make it the keystone of all my dental work.

Speaking of degeneration of the oral tissues brings on more talk. Two of the most marked forms of degeneration of the tissues as the result of uncleanliness are tooth decay and germ inflammation resulting in pyorrhœa.

Pasteur has remarked, "that whenever and wherever there is decomposition of organic matter, whether it be the case of a herb or an oak, of a worm or a whale, the work is exclusively done by infinitely small organisms." Therefore I commend the following propositions:

If the mouth and teeth were kept absolutely clean so that chemical changes could not take place, our teeth would certainly never decay, no matter how imperfectly the enamel may be developed.

If the gums be stimulated in a proper manner, and kept in a healthy condition, they are decidedly less liable to become infected with pyorrhœa.

Bearing these two propositions in mind and striving to attain these results, the mouth will become comparatively healthy.

### TOOTH-BRUSHES AND MOUTH-WASHES.

Some of the proper things used and made for cleaning the teeth, are mouth-washes, tooth-brushes and toothpicks.

One should be careful in the selection of a tooth-brush; also to use a quill toothpick in preference to any other.

Now to speak of the mouth-wash. It is not an easy matter to find a mouth-wash that will destroy bacteria and at the same time not become injurious to the mucous membrane.

After repeated experiments, Miller says an examination has been made and he can soon convince us that there are very few substances at present in the dental materia medica that are available for disinfecting the human mouth.

After experimenting with twenty-six different drugs, itwas found that with one exception not one of these drugs would destroy bacteria in less than five minutes, most of them requiring even eight minutes. Out of all the drugs which are used daily, iodine trichloride destroyed bacteria in one and one-half minutes; saccharine in three-quarters to one minute; benzoic acid two to two and one-half minutes; salicylic acid in three-quarters to one minute. Of these benzoic acid seems to be the only drug from which a suitable mouth-wash can be made.

Listerine and thymol have been favorite mouth-washes in America, but lately a new preparation has become very popular, viz: Borolyptol. It is composed of five per cent. aceto, boro-glyceride two per cent, formaldehyde, in combination with the antiseptic constituents of pinus purrileo, eucalyptus, myrrh, storax, benzoin.

Experiments made by able chemists have shown that it is fully as strong and will destroy bacteria as readily as one one-thousand mercury bichloride.

The experiments are also confirmed by Prof. Gehrman, professor of bacteriology.

In regard to tooth-powders I have little to say, every practitioner has his own formula for each person of his own flock.

In a few words in closing I will say it was not the purpose of this paper to enter into too many details of cleansing operations of the mouth nor the various means used for the prophylactic care of the dental organs.

There have been scores of treatises and papers on this subject in the past and will be in the future.

The object of this paper is to call to your attention a method which, if systematically pursued, will not only relieve the busy practitioner of one of the most disagreeable portions of his work, but will also render a possible condition of aseptic environment of the teeth of all our patients.

At the same time, it is necessary, if we are to expect our patients to practice the lesson of hygiene, that we all pay proper attention to the aseptic conditions of our instruments and all our surroundings.

## DENTAL AND ORAL HYGIENE.*

BY W. A. BARBER, D. D S., SPRINGFIELD, OHIO.

In these days of medical and dental research, when out of chaos are shaped the delicate agents which pertain to elevate and maintain a high standard of excellency of that perhaps most necessary science of this our mortal world, the prevention and alleviation of those ailments of the human physical economy, our attention is arrested, here and there, by many noble and gratifying results.

The subject of oral hygiene, notwithstanding its infinite importance, has not received the attention it demands by writers of our textual literature; nor by our co-laborer, the physician; nor by our patients. And it has not received the attention it should from the dentists.

The necessity for cleanliness has not been urged, as it should be, upon those who come under our care. It is as important to cleanse the teeth of our patients, as it is to treat an abscess, or fill a carious tooth.

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*Presented at the Springfield Dental Society.

Upon being interrogated as to what part of the human body is most suited for lodgment, nourishment, and propogation of the most varied ad violent germs of disease, how many would give the credit to the oral cavity—the mouth and adjacent parts? Such is the case, however, aided by heat and moisture, the mouth is a veritable hot-bed where teeming million of bacterial organizations flourish and multiply. Not only do they attack the delicate structure of the mouth, but they are carried throughout the whole alimentary tract, being either cast off in case of vigorous physical condition, or assimilated into the blood and tissues of the less robust.

How important it is, then, that medical science has striven to check disease which has its begining at the most important opening or gateway of all vital organizations.

Sanitary regulation has reached so far on its onward march toward perfection, that it is now ably represented in the schools of many of our cities, by an army of medical workers. If by the medical surgeon, why not, in the very near future, by the dental surgeon? Perhaps these little mouths do not need cleansing? Fortunate, indeed, it is for the M. D., that, in most cases, a "run out your tongue" is sufficient. How his heart would ache if he followed a closer inspection of those arches of enameled projections, the teeth. Talk about your gutter-filth, or even a Buck Creek! There are times when even these contaminated necessities are stilled, or throw off, in part, their mantle of filth; but the little brook of saliva, laden with germs from decayed tooth structure, and putrescent pulp "go on forever."

The little rivulet by the way side has its variance from monotony, with here and there, a deviation from its onward course, but the steady flow of saliva must, of necessity, follow the straight and narrow way. It is, by law, too filthy to eject, and should, in many cases, be too dirty to swallow.

Our legislators enact laws, and our municipal authorities appoint officers and boards of health, whose special duty it is to see that no filth, and particularly that no animal or vegetable matter be thrown upon, or left in the streets and alleys in our towns and cities, to decompose, and foul odors issue therefrom, to vitiate our air and render it unhealthful. The health of our community requires it.

And shall the conservators of the health of the people—the physicians, or the dentists, then—overlook or disregard this far more concentrated miasma and its source, decayed and decaying teeth, situated as it is in the very gateway of the life of their patients?

I truly believe many patients who treat for dyspepsia, neuralgia, and kindred diseases, would many times be entirely relieved by having their mouths put in a healthy condition.

A case in the practice of a friend in Indiana, a young lady, about 20 years of age, thought to be beyond any help with what was supposed to be consumption, by physician and her friends, and by the lady herself. At that time she was having a great amount of trouble with her teeth, and was prevailed on to consult a dentist. She had decayed teeth filled, abscesses treated, tartar and accumulations on teeth removed, and mouth put in a healthy condition. Result—lady was married, and last I heard of her, she was enjoying good health. Many other cases could I cite, among cases I have seen in hands of older practitioners, but you know of many in your own practice.

Gentlemen, dental hygiene should be taught in our public schools. And every practitioner in dentistry should be a teacher and instructor in a greater degree than he has ever been before. No wonder fillings and other restorations do not stand. I hope we may be able to start something practical, and every time I think of it, I look back upon my first paper before this society, "Popular Dental Education."

We may all have our differences of opinion in regard to ways and means, but one thing we cannot disagree upon, and that is, the crying need that stands out in bold relief before us, and we should, at least, give every aid in our power to eradicate it.

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# HYGIENE IN THE DENTAL OFFICE.*

### BY L. D. ZINKE, D. D. S., CLEVELAND, OHIO.

The laws of hygiene we all know were practiced long before the discovery of micro-organisms and their relation to disease, for it was well understood that the health of the individual depended very largely upon the hygienic surroundings under which he lived and the adherence more or less to the rules of cleanliness. Hygiene of to-day varies somewhat from that of old, in that it is very closely related to bacteriology and is practiced not only as a matter of cleanliness but with a view to the destruction of bacterial life.

The object of this paper is not to bring to your notice some startling new discovery, but to recall a few of the simple procedures of hygiene, which though well known to you all, on account of their simplicity, may be considered unimportant or not considered at all.

We, as dentists, are apt to congratulate ourselves on the rapid progress we have made in our specialty, forgetting the duty we owe to our patients in creating, as far as possible, an aseptic and cleanly environment conducive to their best good and general welfare.

The dental office, as you all know, is visited by all classes of people. The cleanly and the uncleanly; those in the height of good health and those in the lowest forms of disease, all intermingled in one or two small rooms where, in a short time, the air becomes so polluted and laden with disease germs that it becomes an unfit place for any of the above-named classes, including the dentist himself. In connection with this fact I will quote part of an article published in the *Dental Register* in which C. Flugge reports as follows: Dust from matter containing bacteria always consists partially of fragments so minute that they float in the air of a quiet room for more than four hours and the slightest current of air will waft them about. He also states that tiny drops of moisture containing bacteria pass into the air even in closed rooms from the ordiary manipulations and float for five hours being transported by the minutest current. The dissemination of these transportable drops is of the greatest importance in regard to the secretions of the mouth and nose, especially in cases of tuberculosis, influenza, diphtheria, etc. He found by repeated tests that plates of agar become covered with colonies of bacteria at a distance of several yards from persons speaking loudly or energetically. Coughing or sneezing produced a still more rapid and abundant colonization, while the plates showed no growth when the person spoke low and quietly.

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*Read before the Cleveland City Dental Society.

The pyogenic bacteria are frequently found in the mouths of perfectly healthy persons, and decayed teeth are a mine of all sorts of bacteria.

In view of the above-mentioned facts, it is obvious that the first consideration conducive to the best hygiene of a dental office is that of good ventilation, whereby the disease germs become more scattered and dried and their power to produce disease is very much lessened. The cleaning of a dental office should be done as far as possible early in the evening, so that the dust will have had time to settle during the night and will not be floating about the room during the operating hours of the dentist. The dusting would be best done by means of a cloth dampened in some antiseptic solution. Every effort should be made as far as possible to see that the office in general is furnished in such a manner that disinfection of the entire premises is readily attainable. The importance of this suggestion is especially true for the operating room, for this is practically the living-room of the dentist, and for his own good, as well as his patients, too great attention to cleanliness cannot be given. All heavy hangings and carpets or any permanent coverings on the floor should be avoided. The floors of the operating-room should be of hardwood or tiling or some similar substance which can be thoroughly cleaned. When neither of these can be obtained linoleum will answer the purpose very well. Rugs or mats which can be readily removed and cleaned can be placed on the floors, but I believe that even these can be dispensed with, with possibly the exception of a rubber mat to stand on while operating.

Every operating-room should be supplied with a tight cabinet, where all instruments used in the mouth of a patient can be kept out of sight and protected from dust and moisture.

Another important consideration in the operating-room is a sterilizer near at hand where all instruments can be thoroughly sterilized—boiling for a few minutes in a solution of bicarbonate of soda, being probably the best accepted method as it does not rust or destroy nickel-plate and the heat obtained dries them without the use of a towel, making the process a comparatively quick one.

The fountain-cuspidor, seen in our modern operating-rooms, is a great convenience and from a hygienic standpoint is far superior to the old time so-called spit-box and should be used when water and sewer connections can be had.

Last, but not least, the operator should keep himself in such a hygienic condition of person and raiment as to be always agreeable to his patients so that he may expect a similar action on their part. Nothing is more objectionable from an aseptic standpoint, than the too prevalent custom of operating in an ordinary living coat that has been worn everywhere. A most admirable habit is to wear in the operating-room a coat of white duck which is frequently changed for a clean one fresh from the laundry. The same rule should apply to any assistant or attendant who may be in the room.

The washing of the hands should receive strict attention and should be done in a place where the patient may see or at least know of it, afterwards dipping the figers in some antiseptic solution before putting them in the patient's mouth.

It is needless to say that nothing but clean linen should be used about our patients as there is nothing much more offensive to a patient than the sight of a soiled napkin or towel.

I believe, if we are to succeed as doctors of dental surgery, we must comply more closely with the essentials of surgery as taught to-day, the basic principle of which is cleanliness, not only at the specific point of operation, but in our entire surroundings.

I believe, in the dental practice of the near future, strict attention will be given to sterilizing not only the instruments but so far as possible the operating-room and furnishings, and asepsis will play a most important part in the prevention and successful treatment of pathological conditions.

# HYGIENE IN THE HOME.*

BY F. L. LUDWICK, D. D. S., GLENVILLE, OHIO.

I will take as subdivisions of this subject, Air, Food, and Cleanliness.

## AIR.

Air is a fluid composed, mainly, oxygen, twenty, and nitrogen, eighty parts in a hundred, with a very minute addition of carbonic acid gas. Such is air in its pure state and such is the state in which we require it for respiration. When it is loaded with any admixture of a different kind, or its natural proportions are in any way deranged, it cannot be breathed without producing injurious results. Now there are various circumstances which tend to surround us at times with vitiated air, and which must accordingly be guarded against. Most rooms in which human beings live are not strictly close. The chimney and the chinks of doors and windows generally allow of a communication to a certain extent with outer air, so that it rarely happens that great immediate inconvenience is experienced in ordinary apartments from want of fresh air. But it is at the same time quite certain that, in all ordinary apartments, where human beings are assembled, the air unavoidably becomes considerably vitiated, for in such a situation there cannot be a sufficiently ready or copious supply of oxygen to make up for that which has been consumed, and the carbonic acid gas will constantly accumulate. This is particularly the case in bed-rooms and in theaters, churches, and schools. Perhaps it is in bed-rooms that most harm is done. These are generally smaller than other rooms, and they are usually kept closed during the whole night. The result of sleeping in such a room is very injurious.

## FOOD.

Food is a substance which, when introduced into the body, supplies material which renews some structure or maintains some vital process. Probably the most important question in determining the character of our food is that of its digestibility; and it must be borne in mind that the nutritive value and the digestibility of food have no necessary relation to each other. A food may have a very high nutritive value and yet be so indigestible as to be practically useless, and on the other hand, it may be very easily digested and worth little or nothing for nutrition. No general rules as to the digestibility of different foods can be laid down, because it depends very largely upon individual habits and conditions. Persons who have a strong constitution and take sufficient exercise, may eat almost anything with apparent impunity; but young children, who are forming their constitutions, and persons who are delicate and who take but little exercise, are very dependent for health upon a proper selection of food, and should not be overlooked in any home.

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*Read before the Cleveland City Dental Society.

With regard to the quantity of food to be taken, this also depends upon individual conditions and cannot be formed into a general rule. As to the hours of meals, these are of no importance, provided they are regular and come at regular intervals. This interval should never be less than five hours, as the stomach requires at least three hours to digest its supply of food, and not less than two hours should be allowed it for rest and recuperation. Eating between meals is a most injurious practice, the source in children, especially, of endless stomachic disorders. It may be well to give children under ten years of age one more meal during the day than the three which adults in this country usually allow themselves; but these, as I have said above, should be at regular times and with stated intervals between them.

### CLEANLINESS.

The next most important question of hygiene in the home is cleanliness. The process in question is that of perspiration. The matter here concerned is a watery secretion produced by glands, near the surface of the body, and sent up through the skin by channels impersceptibly minute and wonderfully numerous. From one to two pounds of this secretion is believed to exude through these channels, in the course of twenty-four hours, being, in fact, the chief form taken by what is called the waste of the system.

By cleanliness is merely meant taking proper means to prevent this or any other matter accumulating on the surface to the production of certain hurtful consequences. Ablution or washing is the best means of attaining this end; and accordingly it is well for us to wash or bathe the body very frequently. Many leave by far the greater part of their bodies unwashed, except, perhaps, on rare occasions, thinking it enough if the parts exposed to common view be in decent trim. If the object of cleansing were solely to preserve fair appearance, this might be sufficient; but the greater end, it must be clearly seen, is to keep the skin in a fit state for its peculiar and very important functions. Frequent change of the clothing next to the skin is, of course, a great aid to cleanliness, and may partly be esteemed as a substitute for bathing, seeing that the clothes absorb much of the impurities, and, when changed, may be said to carry these off. But still this will not serve the end nearly so well as frequent ablution of the whole person. Any one will be convinced of this, who goes into a bath, and uses the flesh-brush in cleansing his body. The quantity of scurf and impurity which he will then remove, from even a body which has change of linen once a day, will surprise him. These are a few of the many points of hygiene, which I have merely touched upon, leaving many important questions of hygiene in the home untouched.

## HYGIENE IN THE COLLEGE.*

### BY W. G. JOHNSON, D. D. S., CLEVELAND, OHIO.

I shall certainly not endeavor to instruct nor offer suggestions whereby the faculty of any college might be so impressed with my worth as to offer *me* the "chair of hygiene." Hygiene in the college should *not* be given preference over by any of the rest of the curriculum, nor should it be neglected by any animate or inanimate body, be that body masculine, feminine or neuter gender, from and including the dean to the janitor, and from the ceilings to the floors.

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*Read before the Cleveland Dental Society.

With these hygienic surroundings that student, who has sufficient gray matter to enable him to attain a fair average in his studies, will be so impressed with this hygienic state as to aspire to attain even *better* sanitary conditions.

The student who, notwithstanding this wholesome regime, appears with unkept appearance (mind you, do not mistinterpret my meaning) the student with nails in mourning, unkept hair, etc., should be called before the faculty and with all kindness informed that his sphere is in a different course, than that pursued by modern dentists.

If the college cannot teach a man to observe hygienic laws, he is lost. He will never materially change and we would rather incline to the opinion that, like any other incubus, it grows with the years, and that man sooner or later will be of the kind that finds the mouth a cheaper chip-blower than the market affords.

The best advice in the world to a woman is, "if a man drinks, never marry him to reform him." The essayist's advice to the colleges is, "if a man shows persistant lack of hygienic laws, *do not* graduate him." The college necessarily is, and should be, our model, from it we get the basic foundation for any skill and ability, we may acquire. Being our model, they should—as they try to do—impress upon their following that cleanliness is next to Godliness.

I do not believe it is a college man who (a representative of a city supply house, tells me) takes a square piece of rubber dam and keeps punching holes around the same until no more space is left, cleansing it, as he said, after each patient.

"Hygiene in the college" is a subject in which the writer finds it hard to keep from wandering from the text. We all know that the college does mold for the better, practically, all who come under its influence. Occasionally one gets through who is ever after a wart, (pardon the term, "an excresence" might sound better), on the profession. So my only advice to the colleges is, if there are any premature symptoms of this excrescence, that "hygiene" be so persistenty thrown upon them that under its wholesome light they, like nature's most poisonous fungi, might be blotted out by the wholesomeness thereof.

# HYGIENE IN PUBLIC INSTITUTIONS.*

**BY W. S. SYKES, D. D. S., CLEVELAND, OHIO.**

"Hygiene is the art of preserving health, that is, of obtaining the most perfect action of body and mind, during as long a period as is consistent with the laws of life. In other words, it aims at rendering growth more perfect, decay less rapid, life more vigorous and death more remote." Public hygiene may be defined as that branch of sanitary science, which concerns the physical welfare of communities. The practice of this art, is not new or modern in any sense of the word, unless it be that to-day it is more perfect in its operation than ever before, and that its results are more apparent in the prevalence of fewer great plagues, the gradual diminution of the death rate, and the lengthening of the days appointed for man to live upon the earth.

From the earliest times, man has realized that his physical destiny is largely in his own hands. And wherever any degree of civilization existed, there some attempts have been made to check the ravages of disease and to prevent the great epidemics that annually carried off so many unfortunates.

Both the Greeks and Romans practiced this art to some extent, and the sanitary authorities of to-day can improve but little upon that ancient but practical and thorough sanitary code, of the meek but mighty law-giver of the Hebrew race, in which even the critical mind of the late Mr. Ingersoll could find no mistakes.

In days gone by, the sanitary condition of public institutions has been deplorable, to say the least. Hundreds of inmates, crowded into places almost unfit for the brute creation, have been allowed to die of fevers and diseases too loathsome to mention. This has been especially true in the past centuries, in jails and alms-houses, where the deadly typhus, known as gaol-fever, has claimed so many victims. To the fearful ravages of that dread disease, scurvy, due to improper diet, can be attributed hundreds of unnecessary deaths, both on shipboard and among the inmates of some public institutions.

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*Read before the Cleveland City Dental Society.

With the greater knowledge that has come to use, through the advances made in the science of chemistry, pathology, etc., the causes of many of these maladies have been learned, and by removing the cause, have all but been eliminated from the list of ills to which flesh is heir.

To Captain Cook belongs the credit of ascertaining the cause and applying the cure to scurvy, the sailor's worst foe; and to the great reformer, John Howard, is due the honor of freeing the inmates of public jails and like institutions, of the horrors of death through the deadly typhus. Thus, through the years, the good work of bettering the sanitary conditions of our public institutions has gone on, until to-day, their surroundings are more hygienic than perhaps the majority of private homes, all classes of homes, of course, being considered.

Some one has said that, "drinking water, like Cæsar's wife and boiled eggs, should not only be good, but above suspicion;" and the health of a community or of an institution, depends largely upon the purity of its water supply. A general epidemic of typhoid fever can usually be traced to contaminated drinking water or to a foul atmosphere. Where many human beings are crowded into one place, proper ventilation is difficult to obtain, and as in our own city where the filth of all our sewers pollutes the source of our drinking water, this beverage, in its pure state, cannot be gotten in quantities sufficient to supply the needs of so many thousands as make up our population.

Thus while it is surprising, it speaks well for the conduct of our public institutions, that while so much typhoid prevails within our city, there is so little of this disease among the inmates of these institutions.

I cite, for example, the case of our City Infirmary, where out of six hundred and fifty inmates and attendants, only one case of typhoid has occurred the past year. Every precaution is taken to prevent the inception and spread of disease. Large quantities of disinfectants are used in cleansing and scrubbing the walls and floors, and one-half ton of white lead is used per week in painting and keeping pure and clean, the walls and wood work.

Here, though the building is old, a system of ventilation is in use which ordinarily supplies each inmate with sufficient pure air. In the dormitories, accommodating on an average eight persons, each one is allowed an air space of about five hundred cubic feet, the supply of air being constantly changed and renewed. The closets and bath-rooms are removed from the sleeping rooms, the nearest approach being about thirty-five feet. Twenty bath-tubs are provided for the use of these inmates, and all are required to bathe at least once a week.

The water for drinking purposes, at present, is not boiled or filtered, although plans are being made for the installment of a large filter. It is now furnished the inmates, with no further adulteration, than that which it contains as it flows from the source of the city's water supply. Very little drinking water, though, I am told, is used. The inmates, especially the women, prefer cold tea or coffee, all that they desire of these beverages being furnished them between meals.

With a resident population, so far advanced in years, one would expect to find considerable sickness, and I am informed that about twenty per cent, are more or less ailing all of the time, with but little serious illness. Nine cases of smallpox were reported from here during the recent epidemic. There is very little typhoid, and the prevailing ailment of a serious nature is pneumonia. The hygienic condition of the mouths of the inmates is not given much attention by those in charge. No dentist has visited the institution, of late years, in a professional capacity, and when an aching tooth needs to be extracted, which is the only treatment it is expected to receive, the sufferer is consigned to the tender mercies of one of the medical students, assigned as intern at the hospital across the way. The inmates are not provided with tooth-brushes, nor are they instructed as to keeping their mouth and teeth in a hygienic condition, though many individuals are particular in this regard of their own volition.

Very little dental work is done, in this country at least, for sweet charity's sake, after the same manner in which our medical and surgical brethren carry on their charitable work in their free dispensaries. Perhaps this would be a good field for the inauguration of such a work of charity, by the dentists of our city.

Another institution, visited in the interests of the subject under discussion is, the Jones Home for Friendless Children occupy one ward or sleeping-room, an air space of four An elegant, modern building is now almost ready for their use, but for a number of years the work has been carried on in a large frame dwelling, with smaller out buildings for dormitory and hospital purposes. In their present quarters, fifteen children occupy one ward or sleeping-room, an air space of four hundred cubic feet being allowed each sleeper. No means of ventilation, except doors and windows, is provided here, but in their new building the best modern devices will be employed for this purpose. I found all closets and bath-rooms removed a sufficient distance from the sleeping-rooms to maintain a healthful condition of atmosphere. Bathing once a week is required, and a complete change of clothing is made. The children are given a diet of plain, substantial food. The drinking water here, as at the Infirmary, is not boiled or filtered, as a rule. Very little sickness is experienced, except the usual ailments peculiar to childhood.

This past winter, the most serious malady was diphtheria. There were six cases at one time. A remarkable thing was that the remaining thirty-eight children, were given the eliminating dose of antitoxin, and the epidemic spread no further than the first six cases. Imagine the work required to administer this treatment to all of these little patients. A separate building is maintained as a hospital for all cases of illness, and here these six cases were isolated.

The care of the children's teeth, while not the paramount issue at the Home, is yet a very important item. Each child is provided with a tooth-brush, and instructed in the daily care of the teeth and mouth. A member of our Society, Dr. Burrows, looks carefully after the condition of their teeth at regular intervals, while a physician and an oculist also give their services in the interest of the children's welfare.

O. W. Wright, A. M., M. D., formerly health officer at Detroit, in a work entitled "Maxims of Public Health," very severely arraigns the National Government in regard to the unsanitary arrangements of many of its public buildings. He says in part, "tens of thousands of citizens are employed by the federal government, in its civil service. Federal legislators, judges, custom-house officers, post-masters and other dignitaries must occupy such buildings as the government supplies. Regiments of clerks in various places, toil for the people in rooms which not infrequently are ill-ventilated, badly warmed, over crowded, or infected with the gases of decomposing filth. This is bad economy. Nearly every public building in Washington is a monument to hygienic negligence, indifference or ignorance. Many millions have been spent by the government upon imposing structures in other cities, which so far as healthfulness is concerned, are a national shame." He pleads for a competent national sanitary bureau, to have the hygienic supervision of all the public buildings. "A nation is not wise," he says, "that allows its laws to be made and administered by men whose brains are poisoned with the vapors of organic decay."

While we may not agree with every statement of the author, I am sure we must admit that there is much room for sanitary improvement in some of our government buildings.

Within the limits of this brief paper, there is not time enough to discuss the unhygienic condition of some of our public school buildings, with their basement schools. Many of them are poorly ventilated, unevenly heated, and made unfit places in which growing children must spent five or six hours of every school day. One teacher told me that they were not allowed to open a window, and that in consequence both she and many of the children were constantly afflicted with headache, during school hours, due to the impure air in the room. We rejoice that a committee from the Chamber of Commerce, has been appointed to inquire into this unsanitary condition of our schools and to seek a remedy for these abuses.

If time had permitted I should have liked to have visited others of our public institutions and reported their conditions to you, but I think I have given sufficient data to satisfy us that, generally speaking, the conduct of our public institutions is along recognized sanitary lines.

"Constant vigilance is the price of safety," therefore, it behooves us as individuals, in our homes, our offices, and wherever we can have a voice in the management of public institutions, to look well after our surroundings from an hygienic point of view, for the ounce of prevention is, after all, worth far more than the pound of cure needed, when some dread disease enters our home, or sweeps in a blighting epidemic over our whole city.

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## ORAL ANTISEPTICS AND DISEASE GERMS.*

BY GEORGE B. HARRIMAN, D. D. S., BOSTON, MASS.

The scientific application of oral antiseptics is the art of preserving teeth, and is of supreme importance.

Disease germs are found almost everywhere; in the air we breathe, in the water we drink, and in the food we eat. Many are contagious, such as are found in diphtheria, scarlet fever, typhoid fever, smallpox, measles, tuberculosis, and many others not here mentioned, when sown in human soil, deteriorated by the breaking-up plows of weakness, overdoing and ill-feeding.

There are hundreds of antiseptics on the market; some are of inestimable value, some are worthless, and others injurious. I have used many kinds, a number of which I will mention. Sanitol liquid is used and commended by more than three thousand dentists and is an antiseptic of considerable value, especially in treating pyorrhœa alveolaris and other pathological conditions of the oral cavity. Borolyptol is a good disinfectant, when thororoughly and persistently used in treating this inflammatory condition of the oral cavity. I consider it useful in destroying many of the disease germs found in the mouth. It contains two per cent. formaldehyde, one of the most powerful antiseptics known to science. Dr. J. Hubbard's Germicide is used extensively. Crystalline antiseptive, alkaline, is of similar character.

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*Read before the Vermont State Dental Society, March, 1903.

Glyco-thymolene is a disinfectant that every dentist can use with good results in treating alveolar abscess, soft and spongy gums, in cleaning out the pus-pockets around roots of teeth, in treating pyorrhœa alveolaris, and all highly inflamed conditions of the mucous membrane. I use fifty per cent. solution in most cases, although in some instances, full strength should be used.

Dr. Frank J. Thornbury, lecturer on bacteriology in the University of Buffalo, having experimented ten days with Phillips' Milk of Magnesia, with fifty tubes, including the following micro-organisms: bacillus pyocyaneus, bacillus prodigious, staphylococci. lactid acid bacillus, bacillus coli-communis, and other cultures of bacteria, when they have been growing ten hours. covered them with Phillips' Milk of Magnesia, from twelve to twenty-four hours; then poured off the top of the culture, leaving a slight film of Milk of Magnesia. He found it was sufficient to restrain further bacteriological growth and says, "Your so-called preparation belongs to the class of antiseptic agents and that this agent must prove valuable in restricting the ravages of bacteria on teeth."

In the decay of the teeth we find amyloid matter, microbes, leptothrix and various forms of bacterial cocci, zymotic germs of various forms, and many pyogenic forms of bacteria are often found in the exudations from diseased gums. I do not think that I overstate the truth, when I say there are more than one hundred forms of animal and vegetable life found in the oral cavity of man.

In 1870 I sealed in a brass tube an infusion of salivary mucus and calculi, placed it in a vulcanizer, kept it up to a temperature of 380 degrees Fahrenheit for four hours, and upon examination with one-fiftieth-inch objective I found life still present.

In 1873, E. Cutter, A. M., M. D., L. L. D., came to my office and asked me to assist him in the study of the morphology of the blood. The doctor produced some of the membrane from a child who died of that terrible disease, diphtheria, which he had preserved in carbolic acid for two and a half years. We were astonished to find living germs projected by the sun on a large screen. This specimen was immediately buried and we hope it will never be resurrected. It has been reported by one of the assistants in the bacteriological school of Harvard Collge that after burning the sputa of consumptive patients, the ashes, upon being examined immediately with the ordinary magnifying power of the microscope, showed that these germs still lived, but they may be carried a long distance by the air current, that we breathe millions of germs into the system through the mouth and nose, which are deposited on the mucous membrane of man, but, if we are well, they do not develop, and health makes a sterile soil for them. Were it not so, we would all have died ere this.

Drs. Tyndall, Beal, and other great microscopists, after having examined dust, haze and disease germs, estimate it to contain about fifty per cent. inorganic and fifty per cent. organic matter. It is a well-known fact that no place can be so isolated as to be free from particles of dust, so that should you enter a room, flooded with sunlight, the asmosphere would be filled with dust particles visible to the naked eye.

It is absurd to think that all dust consists of disease germs, but there are germs constantly diffused in the atmosphere, ready to generate millions in a few hours, should the circumstances be favorable. The exudations of these disease-producing germs are found in the mouth, on the gums, teeth and alveolar processes of patients. They engender a fetid breath of extreme unpleasantness and of tremendous destructiveness to the tissues of the oral cavity.

To clean the teeth is the first duty of the dentist to his patients; for cleanliness is inseparable from health and beauty.

The teeth, so essential to a pure atmosphere of the mouth, and so indispensable to a pleasing and attractive expression of the face, should always be cleanly. Some oral antiseptic should be used that is best suited to destroy any disease germs that may have escaped the careful eyes of all competent dentists.

After looking the field over carefully, I am fully convinced that contagious germs may be propagated from mouth to mouth, and that all dentists and physicians should thoroughly sterilize their instruments. There are many ways for doing the same; for many years I have used a sixty per cent. solution of carbolic acid; recently I have given preference to a fifty per cent. solution of formaldehyde, after which I have my instruments immersed in hot water and carefully wiped. It is a most wonderful phenomenon that these little germs of animal and vegetable life should exist in such incredible numbers and have such tenacity of life as some of them seem to have.

# CURRENT ARTICLES

[Condensed for THE DENTAL SUMMARY readers.]

## DENTAL HYGIENE.

BY R. M. ARMSTRONG, D. D. S., OTTAWA.

Dr. Marshall, in his late work on "The Principles and Practices of Operative Dentistry," says that cleanliness of the mouth and teeth is the greatest of all prophylactic measures which can be instituted against dental caries.

In regard to the above statement, I think we all agree. The public are not aware that the sanitary condition of the oral cavity means so much, and unless we, in our professional capacity, impress upon them the necessity of a hygienic condition, we neglect our proper duty. We shall consider this subject under two headings: (1) The duty of the dentist; (2) the duty of the patient. It is the dentist's duty to place the mouth in a thoroughly hygienic condition by removing all carious deposits, tartar, stains, etc., because, in doing this, we aid in the destruction of all micro-organisms, and their products, which are recognized to-day as the cause of dental caries. But the duty of the dentist does not terminate here. He must also instruct the patient to keep the oral cavity in that condition and, this being impossible, to return periodically, and allow the dentist to do so. In all cases, the patient should be advised to return to prove to him that his instructions have been intelligently carried out. The sanitary habits of our patients are more responsible for the failures of certain cases of our operations than our mechanical skill. In support of this, I should like to call your attention to any beautiful piece of work you have ever done. If that piece of work is inserted in the mouth of a patient who is a stranger to cleanliness, in a short time you will be called upon to renew it. This state of affairs is not found in any special class of patients, but it exists among the rich and the poor, the refined and the ignorant. And the dentist who puts as high, or a higher estimate upon the sanitary habits of his patients than he does upon his own mechanical skill, will have the satisfaction of seeing his work last much longer than he who possesses just as much skill, regardless of the cleanliness of his patients.

If we are to reach the ideal in dentistry, we must not be content with merely repairing or removing damages done, but we must look farther, and carry out that axiom, that the highest aim of the healing art is not to cure disease, but to prevent it.

It is a recognized fact that the generation immediately preceding us had much better teeth than the present generation. Were the laws of cleanliness in regard to the teeth more respected by them? I do not think so. Why is it, then, that they had better teeth? One reason, I attribute, and the only one I shall touch upon in this paper, is that the food of to-day serves as a much better culture for the development of micro-organisms than did the food of the past generation.

The patient's duty consists in understanding that those instructions must be carried out in order to be compatible with the general health, and the necessity for the preservation of the teeth; that only by carrying out these instructions thoroughly and intelligently they can expect or hope for the condition that the dentist aims at; and that, after their oral cavity has been placed in the desired condition, tooth-picks, silk floss, tooth-brushes, and antiseptic washes, are the only gentle means by which it can be kept healthy.—*Dominion Journal.*

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# THE TRAINED DENTAL NURSE.

BY M. L. RHEIN, M. D., D. D. S., NEW YORK.

The art and handicraft of dentistry has taught us how to cope with dental caries successfully, so that no person in the civilized world at the present day need lose a single tooth from this cause alone.

Many people, however willing they may be to employ our services, are constantly losing teeth in consequence of various pathological disturbances of the peridental tissues. When this lack of inherent vitality of the tooth's periosteum has reached a certain stage, where not only seven-eighths of the root surfaces are covered by nodular secretions, but retrograde metamorphosis in its peculiar way is working toward sepsis and the destruction of cell tissues, we realize that such affected teeth are beyond human intervention. We also know that these very teeth, doomed to be lost as they are when too little vital connection is left, could have been preserved indefinitely if proper hygienic care and treatment had been instituted at the right time and kept up in a systematic way at regular intervals.

Preventive medicine, with its accompanying benefits, has been well understood since the time that Jenner proclaimed the virtues of vaccination. Since then. prophylaxis has invaded the domain of nearly every disease, and its science and practice is daily increasing and its field of usefulness becoming better known.

## PERIOD OF SUSCEPTIBILITY TO CARIES.

The most disturbing period as far as the action of caries is concerned takes place in early life up to the age of puberty. During this time there is very little immunity present and we are well acquainted with the action of the *Leptothrix racemosa*. It is deposited in the well-known gelatinous plaques on the enameled surface of the teeth, and only by means of the presence of these plaques can the action of caries proceed. It has been well demonstrated that if these accretions are kept thoroughly removed and the surface of the teeth kept polished there will be no danger from the action of the caries. This necessitates the very frequent cleansing and polishing of the teeth in order to give the benefit of prophylactic treatment of dental caries to our patients.

### CLEANSING AND POLISHING THE TEETH IN PYORRHEA.

In pyorrhea alveolaris the cleansing and polishing of every portion of exposed tooth-surface, at regular intervals, in such a way as to preserve the tone and health of the contiguous capillary circulation will indefinitely preserve the life and stability of the human teeth. With a full knowledge of the inestimable value resulting from such systematic treatment, it is painful to admit that as a rule the general public get absolutely no benefit from the knowledge of the profession on this subject.

Like many other virtues, prophylactic treatment of the teeth is well understood by all and practiced by only a few dentists. It is scarcely necessary for me to attempt to draw a pen picture of what the dentist does under the pretense of cleansing teeth when requested to perform this service, or to speak of the wilful neglect thereof by the majority, when no special demand is made by the patient. You have all examined the mouths of such patients, who inform you that for years their mouths have had the constant care of Dr. X, and he has cleansed their teeth every year. You have found secretions of years deposited on the roots. The more posterior and inaccessible the teeth, the greater the extent of deposits. You are not surprised at such teeth becoming loose, with a surrounding pericementum more or less inflamed, and corresponding loss of soft tissue from superficial necrosis.

They come to us in all stages of tissue loss, from those easily cured to those irretrievably lost. You cannot fail to recognize the picture, and neither can you fail to place the responsibility for this wholesale destruction of human teeth upon the dentist, who has failed to apply the principles of preventive medicine. Are we to assume from a study of this sad picture that our calling is made up of men lacking in character and principle? Most emphatically, No! In no specialty will be found men with higher attributes of character, in every sense of the word, than in this of ours.

### WHY PROPHYLAXIS IS NEGLECTED.

There are very good reasons why this most important duty to our patients is seriously neglected. The necessity for performing the operations immediately necessary for the repair of existing lesions in tooth-structure and adjacent tissue is of paramount importance; they are more than sufficient to take up all the time of the man with an average practice. The difficulty of receiving commensurate pay for the hours of time required in faithfully carrying out the treatment by prophylaxis, brings up the question of expediency. It is true that Dr. Smith of Philadelphia claims to personally give his patients this treatment at regular intervals. If an effort were made to follow out this method in an average practice there would be time left for nothing else. It certainly is the consensus of professional opinion that the busy practitioner cannot give up his valuable time for this tedious, monotonous, and irksome labor, however important it may be for the salvation of the human teeth. A small number of us have tried to solve this important problem by employing an assistant practitioner to attend to this department. In the judgment of your essayist who has tried this method for twelve years, it has failed to satisfactorily solve the problem.

### THE DENTAL NURSE.

The employment, in a private office, of a graduate to make a specialty of this work is very likely the best remedy we have had at our disposal up to the present time. The greatest objection to the plan is the inability to retain a graduate possessing ordinary ambition and talent a very great length of time in this position. It is impossible to obtain satisfactory results in this treatment if it be necessary every year or two to place a new assistant in this department. The patients object to these changes and cannot fail to contrast the work of the new assistant, who has to be freshly taught the character of the work desired, with the final work of the last assistant which has become well-nigh faultless from a couple of years of constant practice. In discussing this subject with prominent men, it has been generally conceded that far better results could be obtained if suitable female assistants, not graduates, were especially trained and employed for this work.

In some of the States the examining boards have threatened prosecution for infraction of the dental law if such a course be pursued; consequently it has not been adopted, much to the loss of the general public. This brings up the question whether the cleansing and polishing of the teeth, massaging the gums, and the application of remedial agents by non-graduate assistants, under specific prescriptions and directions of the attending stomatologists, are infractions of the law.

It might as well be said that the administration of drugs hypodermically, the introduction of sounds and catheters, lavage and enemata, the dressing of wounds, and numerous other services performed under medical direction by trained nurses are all infractions of the medical law.

Take away the trained nurses from the physician or the surgeon and it would be apparent at a glance how it would interfere with the number of his cases, to say nothing of the inferiority of the resulting attention which is such an important adjunct whenever the nurse is in attendance.

If this correctly describes existing conditions, it follows as a natural conclusion that the problem of how to systematically carry out the prescriptions of dental prophylaxis would be easily solved by the introduction of the trained dental nurse.

In our State, during the past session of the legislature two bills were introduced for placing the trained nurse under the jurisdiction of the State Board of Regents, which necessitates that they should possess the proper qualifications in education and practice. In view of the high esteem held for the work of the trained nurse, it appears remarkable that the sphere of her usefulness has not long since been extended to our own specialty.—*Extract Dental Cosmos.*

# EDITORIAL

## HYGIENE AND PROPHYLAXIS.

We have devoted the greater part of this number of THE SUMMARY to articles on hygiene and prophylaxis, believing that the subject should receive more attention than it has in the past. There is nothing of more importance to-day, not excepting filling and other operations about the teeth.

The dentist is not doing his whole duty to his patients when he dismisses them from his office without thoroughly scaling and cleansing the teeth and instructing those patients in the care and attention to be given the mouth and teeth at home.

The various articles presented in this issue should be read carefully and their teachings heeded.

Members of the profession have long talked about dental and oral hygiene in society meetings but have been slow to adopt even their own advice in daily practice.

The more one studies the subject the more impressed he becomes with the necessity for more active work along the lines of dental and oral hygiene and prophylaxis.

Some time ago in an editorial we told our readers of the excellent results of compulsory prophylaxis in match factories. Since that time we have had the pleasure of visiting Dr. D. D. Smith, Philadelphia, and through his courtesy permitted to examine the mouths of many of his private patients who have undergone his prophylactic treatment for several years. The results he has obtained in cases of long standing pyorrhea alveolaris by his thorough treatment and subsequent monthly scaling and cleansing of the teeth, are certainly remarkable and show what can be accomplished by this means of prophylxis.

"An ounce of prevention is better than a pound of cure," is an adage the dentist can safely follow and one that should be kept uppermost in his mind.

When the dentist accepts a patient it is his duty to give that patient the best service possible, and this he does not do when he dismisses one with a mouth reeking with filth and a menace to the health of that individual.

The dental profession should pay more attention to oral hygiene and phophylaxis would it serve its whole mission and give to patients that which their implicit trust in the dentist deserves.

## LAID-OVER MATERIAL.

On account of this special hygiene number we have had to lay over valuable material, but the Teachers' Series of practical articles and regular contributions will be presented as usual in the next number.

# SUGGESTIONS

## TREATMENT OF DRY-SOCKET.

A patient for whom a third molar had been extracted by a specialist returned two days afterwards for consultation, complaining of extreme pain in the face, and of the teeth in both maxillæ simulating irritation of a pulp. Careful examination excluded the teeth. When the alveolus from which the tooth had been removed was examined, it was found devoid of the normal coagulum, with the bone bare.

A stiff dough-like paste, similar to a suppository, was made of orthoform, combined with oil of sesame and glycerin, with which the socket was filled. This means gave protection to the exposed tissue, as well as nearly immediate relief by the analgesic properties of the orthoform.—*L. J. in International.*

## STERILIZATION OF THE HANDS.

**S. A. Hopkins, Boston.**

The hands cannot be rendered absolutely sterile without an expenditure of time and trouble which is out of all proportion to the necessities of the case, but they may be rendered practically sterile by the use of permanganate of potash, or, better still, by a new preparation called sublamine.

It is an ethylenediamine-sulphate of mercury, about as powerful as the corrosive sublimate, but does not irritate the hands. It dissolves well in water, can be used with soap-suds, which is not true of sublimate, penetrates deeper, and leaves the hands smooth. After infective material has touched the hands they should always be washed in sublamine. We may as well give up the idea of strictly aseptic dental operations, because we cannot possibly sterilize the mouth, and the moment an instrument enters it becomes contaminated.—*Extract International.*

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## FORMALIN STERILIZATION.

**S. A. Hopkins, Boston.**

Boiling water will effectually sterilize dental instruments. There are, however, many dental implements which cannot, without injury, be submitted to boiling water, but these can be sterilized quickly and effectually in a formalin oven. The Schering formalin sterilizer and lamp are probably familiar to you all. If you wish me to be accurate, I will say that in experiments which I have made, instruments kept in the oven for ten minutes, with three small or one large pastile burning, showed no growth at the end of twenty-four hours, when placed in bouillon tubes: a slight growth was noticed at the end of forty-eight hours. Similar instruments not sterilized showed distinct growth in twelve hours, and profuse growth of many varieties in twenty-four hours. Instruments kept in the oven for fifteen minutes showed no growth. Fifteen minutes may therefore be considered effectual.—*Extract from article in International.*

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## NECESSITY OF PRESERVING THE INTERPROXIMAL SPACE.

**W. G. Crandell, Spencer, Ia.**

I would impress upon your minds the necessity of preserving the interproximal space by proper contact points; I say contact points, not contact. It should be so constructed that a thread when passed through should snap the same as between normal teeth. If this be not thoroughly done the packing of food against the gum septum may result in interstitial gingivitis. A crown so constructed should be a lifelong adornment to the facial anatomy of ur patients and a sufficient monument to modern prosthodontia.—*Cosmos.*

## HOW TO CEMENT JOINTS.

**W. A. Brownlee, Mt. Forest, Can.**

In cementing the back of joints in gum sections before packing the flask, put the fluid in first, then with a thin excavator work in the powder. The joint will be more completely filled than if the cement is mixed previously.—*Dominion.*

## TO PREVENT AIR-BUBBLES IN FLASKING.

**W. A. Brownlee, Mt. Forest, Can.**

Soaking the lower part of a flask in water for a few minutes before you fill in the upper half will entirely prevent air-bubbles in the plaster. Try it.—*Dominion.*

## MODELLING WAX.

**Thos. Headridge.**

(1) Yellow wax, 1,000; Venice turpentine, 130 parts; lard, 65 parts; bole, 725. The mixture when still liquid is poured into tepid water and kneaded until a plastic mass is obtained.

(2) Summer modelling wax: White wax, 20 parts; ordinray turpentine, 4 parts; sesame oil, 1 part; vermilion, 2 parts.

(3) Winter modelling wax: White wax, 20 parts; ordinary turpentine, 6 parts; sesame oil, 2 parts; vermilion, 2 parts. Preparation as for No. 1.—*Phar. Zeitung.*

## ON A SIMPLIFIED AND BETTER METHOD OF TAKING PLASTER IMPRESSIONS.

Dr. E. Latzer and Dr. K. Weisl (Brunn) point out that the chief difficulty in obtaining good results for plaster impressions lies in the liability of these to fracture into many pieces and the difficulty of adapting the fragments. Take a tray, as nearly as possible the correct size, smear it over with vaseline, cover its surface with a piece of fine gauze, previously wetted, allowing this to project about 2 to 3 cm. beyond the margins of the tray, and proceed to fill the tray with plaster and to take the impression in the usual manner. The gauze used, a thin variety of tulle, has a meshwork of about 1-20 of an inch in diameter. The gauze need not lie close to the tray and folds do not matter, in the result the authors find that the gauze becomes embedded in plaster. When the plaster has set, remove the tray and then remove the plaster impression with the therein imbedded gauze, by pressing it down with the fingers introduced between it and the cheek. The impression is, of course, cracked, but the gauze holds the fragments together. The impression is then laid in the palm of the hand, the fragments bent back to allow the *debris* to be blown out from between the joints, which are then closed up and the impression replaced in the tray and the model cast in the usual way.—*Vierteljahrsschrift.*

## TO REMOVE MODEL FROM ARTICULATOR.

**W. A. Brownlee.**

A safe and quick way to remove a model from the articulator is to grip the articulator in a bench vise, and cut through the plaster with a small hand-saw. This plan is especially suitable for the removal of lower models, which are so easily broken. If sawed off at the right depth no paring is necessary before flasking.—*Dominion.*

## AN EASY METHOD OF MAKING SOLID GOLD DUMMIES.

**W. Cecil Trotter, Toronto.**

1. Cover the concave surface of the metal disk (which accompanies Millett's system) with sealing-wax or dental lac.

2. Select a porcelain tooth, preferably a diatoric tooth, which is suitable in size and shape for the space required to be filled, and embed its lower pin surface in the softened sealing-wax, so as to leave the buccal and occlusal surfaces exposed.

3. Cut a piece of pure 24k. gold plate, gauge 32, and of sufficient size to cover the occlusal, buccal, mesial and distal surfaces of the tooth when stamped up.

4. After annealing this gold, carefully press it into contact with the surfaces of the porcelain tooth, and then stamp it into close contact with the tooth by means of the rubber block and metal plunger, etc.

5. The pure gold tooth shell which is thus obtained may be strengthened with gold solder, wherever required, and may then be either filled up flat with more solder, or made into a hollow box by soldering a gold base over the open edges of the gold shell, or the hollow may be filled with cement, and then have the cover soldered on.

This gives you a perfect tooth form, with a pure gold surface, which is exactly the correct size and shape.—*Dominion.*

## CAVITY VARNISH.

Dissolve some copal in equal parts of alcohol and chloroform; add one equal volume of hydro-napthol, and the product will be a very adhesive and strongly antiseptic varnish, free from all caustic properties.—*Stomatologist.*

## A HINT AS TO THE RICHMOND CROWN.

**J. E. Chace, Osceola, Fla.**

I have found a great deal of satisfaction in the use of the following idea in making the Richmond crown. It does away with the necessity of investing cap and pin for soldering and yet gives accuracy of relationship between them, as well as making it easy to remove cap with impression, thereby doing away with the annoyance of having cap displaced while varnishing impression, running model, etc. After making cap and punching hole for pin the cap is removed from root and the pin is fitted so as not to bind when pushed to place. The cap is then replaced on root, and the pin is inserted and marked at a point just free of the cap. The pin is then removed and deeply notched with file at the point marked. A piece of scrap plate almost as wide as the diameter of pin and about 1-2 inch long is then selected, the cap is put on the root, and the tip and end of the piece of scrap is put through the hole; the pin is then forced to place. The piece of scrap plate acts as a wedge and binds the pin and cap together so they may be readily removed and soldered without change of adaptation. After soldering the pin is broken off at the notch and cap is put in place to test its fit, etc. If found satisfactory, the long, free end of the piece of scrap is bent in the form of a loop, and the impression is taken. The cap is always removed with the impression and is not readily displaced while varnishing impression or running the model. After separating the model, the scrap is quickly broken off by bending from one side to the other.—*Dental Hints.*

## TREATMENT OF HYPERSENSITIVE DENTINE.

Dr. Fayoux (*l'Idontologie*) treats sensitive dentine by filling the cavity with a paste made by mixing together zinc oxid and eugenol. A paste thus made hardens in the presence of moisture, and when allowed to remain in the sensitive cavity for eight, fifteen or more days causes the disappearance of all sensitivity.—*Era.*

## GUTTA-PERCHA POINTS THAT FIT ROOT CANALS.

**O. E. Inglis, Philadelphia.**

The points are made of pink gutta-percha by gradually rolling pieces of it down on a glass or porcelain slab with an ivory spatula, fitting the point in the canal occasionally as the operation proceeds, to determine the exact size and form. The section of the gutta-percha toward the point is then cut off in accordance with the length of the canal.—*Cosmos.*

## CONVENIENT POLISHING WHEELS.

**W. A. Brownlee, Mt. Forest, Can.**

Very convenient small polishing wheels for getting at difficult places on a plate can be quickly made from ordinary sole leather. Punch a hole in a piece the desired size, screw it on the lathe spindle, and with a sharp tool turn it to the size and shape to suit the case in hand.—*Dominion.*

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## BACKING TEETH FOR METAL WORK.

**P. B. McCullough.**

Hold a piece of 30-gauge platina plate flat against the tooth with an edge touching the side of a pin, mark a line from the pin across the metal, then place the platina flat against the tooth under the pins and mark two lines from the pins across the first line. Punch holes where the lines intersect; place backing and file flush with the edge of the tooth all around; then remove platina and adapt "crown metal" (pure gold and platina rolled together) two one-thousandths of an inch, by first marking with the pins an impression in the foil, then puncture holes with a sharp-pointed instrument, then press to place upon the tooth, and with an instrument having a hole to telescope over the pins, with a turn burnish the extended edges of the punctured holes around pins, thus making a water-tight joint. Have the foil—gold surface always next the porcelain—extend beyond the edge of the tooth the sixteenth of an inch and cover the end fitting the cap (if a crown); then replace the platina backing and hold by splitting the previously cut pins.

The free edge of the foil should be drawn towards the backing at a slight angle, or at a right angle to the backing. The foil extending over the end of the facing next the cap protects it from borax, draws the solder, and reflects a better shade at the joint in front. The free edge of foil at the mesial, distal, and incisal edges protects the tooth from the flame and borax, where, with the old form of backing it is often exposed in trimming the investment. The matrix-like box thus formed with the cap draws the solder to such shape as to allow in finishing with the least labor the imitation of the outline of the palatal surface of incisor teeth, a detail never observed.—*International.*

## HOW TO OBSERVE THE BAKING POINT OF PORCELAIN.

**C. J. Lange, Milwaukee.**

By throwing the light of a mirror into the furnace the flow of porcelain can readily be detected.—*Review.*

## TILE CEMENT SLAB.

**H. B. Denton, Eveleth, Minn.**

The ideal slab on which to mix cement is a glazed tile. The ornamental tiles used around fireplace mantels are the best, and may be procured in conveniet sizes, from any dealer in builders' supplies, for a few cents. They are perfect to mix cement on, and can easily be made *absolutely clean.* Scraping to remove cement does not scratch them, and thus afford lodging places for hardened cement, as it will with a glass slab, and make it impossible to have an "absolutely clean" surface.—*Review.*

## TREATMENT OF CLOGGED WATER-PIPES.

**G. C. Jordon, Toronto, Can.**

When waste-pipe of fountain-spittoon or sink becomes clogged, and there is no plumber available, fill spittoon or sink half full of water; then by inverting an ordinary rubber plaster bowl over orifice of waste-pipe and exerting a quick, sharp pressure on bowl the obstruction is readily removed.—*Dominion Journal.*

# SOCIETY

## NORTHERN INDIANA DENTAL ASSOCIATION.

The Northern Indiana Dental Association will hold its annual meeting at Wabash, Indiana, on the 15th and 16th of September, 1903. Will you kindly announce this meeting in the next issue of your journal?

J. A. Stoeckley, *Secretary.*

## SEVENTH AND EIGHTH DISTRICT DENTAL SOCIETIES.

The Thirty-fifth Union Meeting of the Seventh and Eighth District Societies will be held at Rochester, N. Y., October 27, 28 and 29, 1903. Every effort is being made to make this the most successful and interesting meetings ever held in New York State. One day will be devoted exclusively to clinics, one-half of them will be held in the morning and the remainder in the afternoon.

# AFTERMATH

## PERSONAL AND MISCELLANY.

New Dental School:—A new dental school is being established in New Zealand.

Ohio Dental Examining Board, at its last meeting, examined 24 candidates, 15 of whom passed.

Died.—Dr. J. B. Rawson, Jamestown, N. Y., died July 23. He was one of the pioneer dentists of that section.

Married.—Dr. Sydney Smith, of Paducah, Ky., was married to Miss Zilther Kellings, of Prospect, Tenn., in July.

Massachusetts Dental Board, at its last meeting examined 116 candidates for license, but only 53 of the number passed successfully.

Dental Board Appointment.—Dr. M. D. Thurston, Spokane, Wash., has been appointed on the State Examining Board by Governor McBride.

Died From Burns.—Dr. J. O. Ness, Council Bluffs, Ia., died July 17, as a result of the explosion in his office of a gasoline tank two weeks previous.

Dr. J. E. Libbey Dead.—Dr. J. E. Libbey, Pittsburg, Pa., died suddenly July 18. He was one of the best known and most popular dentists in that vicinity.

Murder and Suicide.—Dr. Wm. Boyle, Wichita, Kan., shot G. J. Varnouf, then swallowed a handful of strychnine. Both men were dead inside of an hour.

Donation of Tooth-Brushes.—The Maryland State Dental Association will supply every girl member of the Girls' Lodge, Fresh Air Camp, in that State, with tooth-brushes.

Reappointed.—Dr. M. A. Mason, Ft. Wayne, Ind., has just been reelected a member of the State Examining Board for three years. This is Dr. Mason's third term.

Delta Sigma Delta Fraternity Officers.—S. G. M., Geo. N. West, Chicago; S. W. M., R. H. Swing, Philadelphia; S. S., L. O. Green, Chicago; S. T., H. Raymond, Detroit; S. H., F. Holland, Atlanta.

DENTIST A MAYOR OF SKAGWAY.—Word has been received that Dr. L. S. Kellar, formerly of St. Paul, Minn., has recently been elected Mayor of Skagway, Alaska. Dr. Kellar left for the gold fields in 1898.

SUICIDE OF DENTIST.—Dr. Louis Shaw, Brooklyn, N. Y., committed suicide July 25, by shooting himself in bed. He had speculated heavily in stocks and a slump in the market and losses in consequence lead to the act.

NATIONAL ASSOCIATION DENTAL FACULTIES elected officers as follows: President, M. C. Marshall, St. Louis; vice-president, E. C. Kirk, Philadelphia; secretary, J. H. Kennerly, St. Louis; treasurer, H. R. Jewett, Atlanta.

DENTAL SURGEON APPOINTMENT.—Dr. C. J. Sowle, Rockford, Ill., has been appointed dental surgeon of the Third Brigade. The appointment of a dental surgeon for every brigade has been required by the new military law.

TENNESSEE STATE DENTAL SOCIETY officers are as follows: President, B. Boyle, Nashville; J. D. Townes, Memphis, first vice-president; A. J. Cottdell, second vice-president; J. T. Crews, Jackson, secretary; J. P. Sims, Nashville, treasurer.

SOUTH CAROLINA STATE DENTAL SOCIETY.—New officers: Dr. George W. Dick, Sumter, president; Dr. J. M. Quattlebaum, Columbia, first vice-president; Dr. G. F. Hair, Bamberg, second vice-president; Dr. E. J. Etheredge, corresponding secretary; Dr. R. Atmar Smith, recording secretary.

NEW JERSEY STATE SOCIETY.—Officers elected are: President, Herbert S. Sutphin, of Newark; vice-president, W. G. Chase, of Princeton; secretary, Charles A. Meeker, of Newark; treasurer, Henry A. Hull, of New Brunswick. It was decided to hold the convention next year at Asbury Park.

WISCONSIN STATE SOCIETY—New officers are: President, Dr. A. G. Fee, Superior; first vice-president, Dr. F. G. Van Seratum, Hurley; second vice-president; Dr. G. V. Miller, Manitowoc; secretary, Dr. W. H. Mueller, Madison; treasurer, Dr. Adolph Grappers, Milwaukee. Manitowoc was chosen as the place for holding the next meeting.

DENTAL COLLEGE IMPROVED.—The New Orleans College of Dentistry has contracted for a new elegant dental building, and has strengthened its faculty which is now made up of the following well-known educators: G. J. Friedrichs, A. L. Friedrichs, L. D. Archinard, S. R. Olliphant, C. V. Vignes, E. L. McGhee, M. R. Fisher, J. J. Archinard.

PENNSYLVANIA STATE DENTAL SOCIETY OFFICERS.—New officers are: President, L. S. Jamison, Philadelphia; first vice-president, C. M. Brennell, Philadelphia; second vice-president, C. V. Kratzer, Reading; recording secretary, G. W. Cupit, Philadelphia; corresponding secretary, V. S. Jones, Chester; treasurer, R. H. D. Swing, Philadelphia.

WANT A NEW DENTAL LAW.—The District of Columbia now admits dentists to practice without examination, being the only State in that section that does this, and in consequence is a dumping ground for dentists who are not successful in securing license in other States. The Board will urge Congress to pass a new law regulating dentistry in the District.

DENTIST GETS A YEAR IN JAIL.—Dr. Selbach, a former dentist, of Columbus, O., assaulted three nuns wearing the black and white robes of the Dominican order, in San Francisco, and narrowly escaped serious injury from an incensed mob. He was rescued by the police after he had been badly beaten, and taken to the city prison. At the trial that followed he was sentenced to one year in jail for the assault.

MAINE DENTAL SOCIETY.—New officers are: President, F. E. Maxfield, of Bangor; vice-president, R. W. Bickford, of Rockland; secretary, H. A. Kelley, of Portland; treasurer, E. J. Roberts, of Augusta; librarian, Elbridge Bacon, of Bar Mills; executive committee, W. S. Payson, Castine; C. H. Haines, Dexter; George E. Dow, Portland; J. W. Robinson, Auburn; W. S. Miller, Fairfield. Bangor was selected as the next place of meeting.

NATIONAL DENTAL ASSOCIATION elected officers as follows: President, C. C. Chittenden, Madison, Wis.; vice-president from the west, Harry P. Carlton, San Francisco; vice-president from the east, W. E. Boardman, Boston; vice-president from the south, J. G. Fife, Galveston, Tex.; corresponding secretary, C. S. Butler, Buffalo; recording secretary, A. H. Peck, Chicago; treasurer, V. E. Turner, Raleigh, S. C.; executive committee, Drs. Harriman, C. N. Johnson and V. H. Jackson; executive council, H. J. Burkhart, J. Y. Crawford, M. F. Finley, C. McManus, B. Holly Smith.

DENTAL MANUFACTURING COMPANY.—Since May 1, 1903, the Buffalo Dental Manufacturing Co., have been occupying their handsome new three-story and basement factory building, and the entire plant is now in full operation. The motive power is electricity, generated at Niagara Falls, or "Falls Power" so called, and visitors to Niagara or Buffalo will find themselves well repaid for the time spent in an inspection of this thoroughly modern factory. All visitors are made cordially welcome, and members of the profession especially should not neglect the opportunity afforded for witnessing many interesting operations in the manufacture of dental specialties.

DENTAL OFFICE THIEVES stole $250 worth of gold, etc., from Drs. C. E. Ward, W. F. Redman, J. R. Johnson, J. P. Williams and S. O. Marshall, Henderson, Ky., July 15. Drs. L. H. Pumphrey and V. S. W. Trippett, Princeton, Ind., lost $100 of materials July 15. Dr. Sickler, Detroit, lost material July 14. Dr. Allen Ashcraft, Cairo, Ill., was relieved of $150 worth of gold and other materials July 20. Drs. E. A. Kartack and Geo. H. Henderson, Springfield, were robbed, July 21, of gold, etc., amounting to $125. Dr. E. N. Fruit, Hopkinsville, Ky., was robbed of $75 worth of materials July 20. Dr. C. Rausenberger lost $100 worth of materials and instruments at Germantown, Pa., July 23. Dentists in Sandusky and Norwalk, Ohio, were robbed of materials July 23.

CALIFORNIA DENTAL LAW HELD TO BE UNCONSTITUTIONAL.—Judge A. J. Buckles of the Superior Court has rendered a decision in which the law, enacted by the legislature in 1901 requiring dentists to obtain from the State Board of Examiners a license before being allowed to practice, is declared to be unconstitutional. The decision grew out of the case of Dr. O. B. Hewitt, who was arrested in Vallejo some time ago for practicing his profession without a license. Hewitt's attorney sued out a writ of habeas corpus, claiming that the law was unconstitutional, which claim was upheld by the court and Hewitt ordered released. The decision states that the law is class legislation, in that it required all persons who entered upon the practice of dentistry after the date upon which the law went into effect to obtain such license, while those who were engaged in such practice prior to such date were exempt from the provisions.

DENTIST DISCOVERS GOLD MINE.—Last summer Dr. W. G. Sylvester, a dentist, of Pittsburg, Pa., was spending a vacation on Kern river, in the mountains of Tulare county, Cal. One day while hunting on the mountain side he slipped, in his fall breaking off a piece of rock. Knowing little of its value, the doctor kept it without saying anything further about it. Several weeks ago, however, he was talking with Dr. Shaffer and others about ores and incidentally mentioned this sample, which he showed them. They at once recognized its value and formed a party to relocate the place. The party which went out was composed of Drs. Chaffer and Sylvester, W. J. Bennett and Jud Elwood. The ore "horned" $12.50 to the ton and a fire test showed as high as $150. Returns have not yet been received from the assayers in San Francisco, but owing to the length and width of the ledge mining men say that the find will prove one of the richest in the State should the assay show only $4. The presence of an excellent mill site on Kern river within four hundred feet greatly enhances its value. The claim is named the "Lucky Four."

INTERCHANGE OF LICENSE BETWEEN NEW YORK AND PENNSYLVANIA.—The dental boards of New York and Pennsylvania have agreed upon interchange of license under the following conditions:

*First*:—It is understood and admitted that the standard of the professional examination of each board is practically equal, and though different in detail is mutually acceptable.

*Second*:—Licentiates of the Pennsylvania Board who have received the degree of D. D. S. or other recognized dental degree are to be granted licenses to practice in New York State without examination upon payment of the regular licensing fee, provided that the preliminary education of the candidate is equal to that required by the Nw York statute; and licentiates of the New York Board are to be granted licenses to practice in Pennsylvania under the same conditions.

*Third*:—Immediately after any examination by either board complete sets of the questions used shall be mailed to the Examiners of each State, to the Dental Council of Pennsylvania, and to the Regents of the University of the State of New York.

*Fourth*:—Applications for license under this interchange shall be indorsed in New York State by the president and the secretary of the Board of Examiners and by the secretary of the Regents and in Pennsylvania by the president and secretary of the Examining Board and by the secretary of the Dental Council, and shall be accompanied with the original or certified copies of certificates of preliminary education.

*Fifth*:—The names of the unsuccessful candidates in each State shall be sent to the secretaries of the Examining Boards and to the Regents or Council as the case may be.

*Sixth*:—All papers connected with the examinations shall be placed on file with the Regents or Council and shall be public records.

*Seventh*:—Those who have received the New York State license to practice dentistry granted since 1895, or a Pennsylvania license granted since 1897, may apply for the interchange established by this agreement.

*For New York*: { William Carr, D. D. S.
William Jarvie, D. D. S.
*For Pennsylvania:* { J. T. Lippincott, D. D. S.
Howard E. Roberts, D. D. S.

Recent Patents of Interest to Dentists.—

731337, Dental pliers, Calvin S. Case, Chicago, Ill.
731030, Dental flask press, Wm. Finn, Cedar Rapids, Iowa.
731302, Attachment for dental engines, John C. Holson, Ord, Nebr.
731246, Fountain cuspidor, John V. Trenaman, New York, N. Y.
731849, Dental preparation for use in the operation of capping pulps, Abram L. Bower, Boyertown, Pa.
731674, Dental plate and making same, Harry L. Finnell, Peoria, Ill.
731586, Upper cuspid forceps, Francis S. Manning, Versailles, Mo.
731594, Porcelain crown for teeth, Wm. H. Mosley, Midland, Canada.
732044, Dental plugger, Alden Bush, Columbus, O.
732288, Dental forceps, Kuno Felsch, Elberfeld, Germany.
732662, Dental medicine receptacle, George B. Smith, Fremont, Ohio.
732387, Dental engine, Julius B. Wantz, Chicago, Ill.
732922, Pivot pin for teeth, Egbert A. Clark, Washington, D. C.
733320, Dental securing device, Wm. E. Griswold, New York, N. Y
733321, Dental jig, Wm. E. Griswold, New York, N. Y.
733061, Composition for dentists' tapers, Leo C. Mandel, St. Louis, Mo.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

More Kind Words for The Dental Summary.—Dr. A. W. Strecker, Philadelphia, writes: "I appreciate The Dental Summary very much. Be sure and inform me when my subscription expires, for I do not want it discontinued."

Dr. J. P. Huntley, Atlanta, Ga., writes: "I advise every dentist to take The Dental Summary for he will find a vast amount of information in it."

Dr. J. N. MacDowell, Chicago, writes: "The Dental Summary is one of the most newsy and interesting dental journals published. Keep up the good work."

# DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

## A MUTILATED CASE.

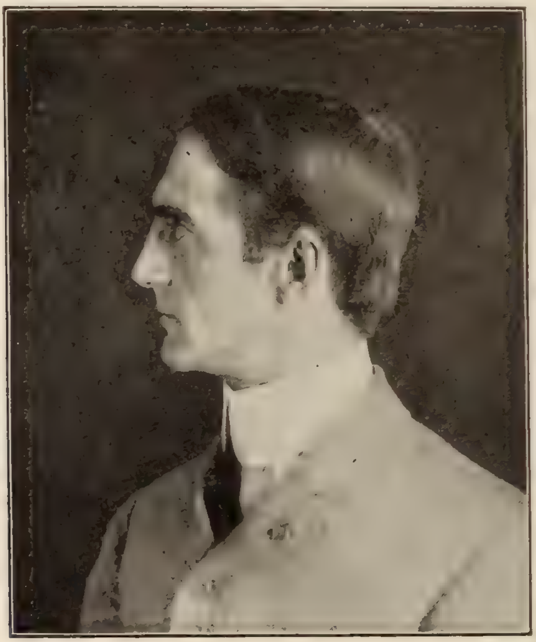
BY A. H. KETCHAM, D. D. S., DENVER, COL.

Professor of Orthodontia, Colorado College of Dental Surgery.

About sixteen years ago a Philadelphia boy presented himself to a dentist for treatment of malocclusion. It was a typical Class I. case, the arches in proper mesio-distal relations, the upper lateral incisors were in labial and the lower right cuspid in lingual occlusion.

The usual methods of the day were employed to "regulate," but without avail. Finally, yielding to the entreaties of the boy, who had been able to eat or sleep but little, owing to the torture of the crude appliances, the upper lateral incisors and lower right cuspid were extracted; also, to make "more room" the first molars on the left side were sacrificed.

Now, I wish to call attention to photographs of the face and models, made the latter part of July, 1902, at thirty-two years of age. Notice the lack of fullness of the lips, and in the profile the slanting in of the lips over the crowns of the incisors and cuspids. In the full face, the right side shows the greatest development of the muscles, on account of the habit of masticating food on that side only. The photographs of the models show that the spaces where the right upper lateral incisor and lower cuspid were sacrificed, have closed, by the remaining incisors moving lingually, and towards the right, the right upper cuspid, bicuspids and molars, and the lower bicuspids and molars, moving lingually and a little mesially. On the left side the cuspids and bicuspids have moved lingually, the lower cuspid has prevented the upper from moving mesially enough to entirely close the space between cuspid and central incisor. Examine carefully the occlusion of the remaining molars on this side; they have tipped forward and lingually, until only the distal cusps are in contact. Imagine trying to masticate a beefsteak with those teeth! Yet even to-day, when the extraction of an incisor is universally considered a crime, the extraction of the first molars is sometimes practiced by men who are considered competent for the general practice of dentistry, the result of this malpractice in almost all cases, being that the patient eventually loses the normal use of the remaining molars, in the manner shown by the photograph.



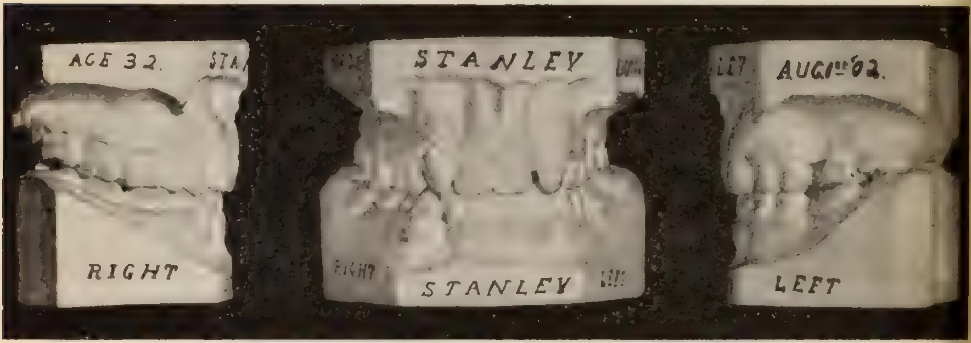
*The writer believes that in all cases where the first permanent molars are lost, they should be replaced as soon as possible by plates or bridges.* Especially is this true in the mouth of a young person; also in the event of the loss of a temporary molar, months before the appearance of the bicuspid, the space should be retained if possible by a wire anchored in cavities in adjoining teeth.

In the treatment of the case we used Dr. Angle's regulating appliances. I say "we," because Dr. R. B. Stanley, an Orthodontist and classmate of mine in Angle's school, was the patient.

Placing D bands on the first molars on the right, and second molars on the left, the expansion arches E were then put in place. Pressure was first applied on August 1st, 1902.

The D bands on the second molars on the left side were placed so that the anterior ends were nearer the gums than the posterior ends. This threw the arches onto the gums at the necks of the anterior teeth, until the arches were wired into position. Then they pushed up and back on the left molars and gradually forced them upright.

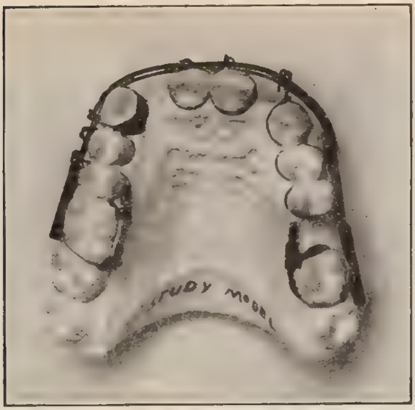
The incisors and cuspids were moved labially and the bicuspids buccally, by tying to the arches with the brass wire ligatures. The arches were removed from time to time as the cuspids and bicuspids were brought out to touch them, and bent to make a wider arch and increase the spring on the molars. The expansion arches were moved labially by turning the nuts against the tubes on D bands. The last of September, the expansion of the upper bicuspids, incisors and left cuspid was completed, while the right cuspid was more obstinate and also was rotated by means of a band, with a spur on lingual side, cemented to the tooth. A wire ligature was looped around spur from distal side and being renewed occasionally, drew the mesial corner lingually. In like manner the lower left cuspid was rotated, mesial corner labially, and right lower lateral incisor, distal corner labially.



The right upper cuspid was retained by a band, with a spur of G wire resting on buccal surface of first bicuspid, and lower left cuspid and right lateral incisor were banded with G wire soldered between on lingual side. The retention is shown in photographs of completed case.

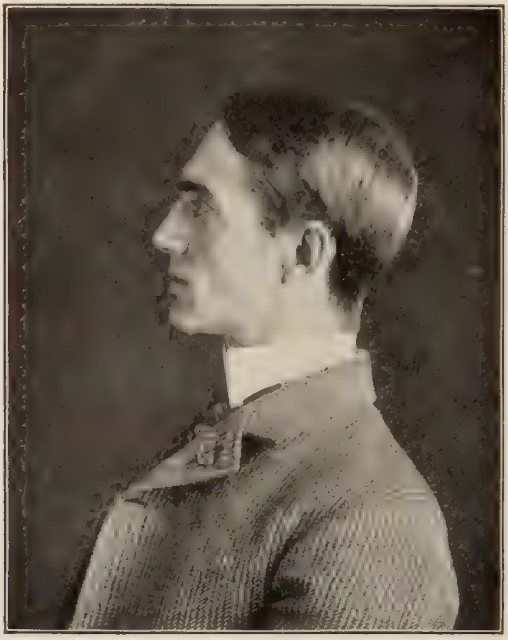
The expansion of the left lower bicuspids was completed at the same time as the upper, but the right lower bicuspids were much slower. The incisors, both upper and lower, moved labially readily.

About October 15th, a plate carrying the upper lateral incisors and retaining the expansion of the bicuspids, was made. A wire ligature was passed around the left upper bicuspids and cuspid, and fastened to the arch by giving a half turn over a notch cut in the rib opposite left lateral incisor. Then the

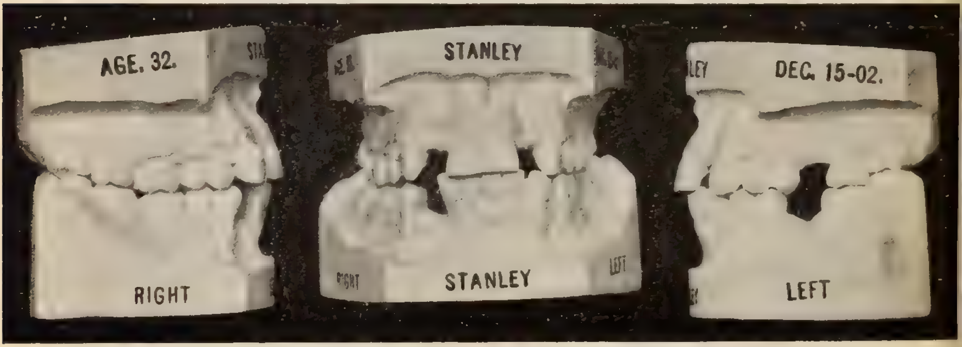


central incisors, right cuspid and bicuspids being wired to the arch (as shown by photographs of study model), the nut in front of left molar was turned, pushing the molar back, the outward spring of the arch exerted from wire opposite lateral incisor forced the molar buccally, the lower molar follow-

ing, the occlusion of the upper helping, and nut on arch in front of lower band being turned as well.

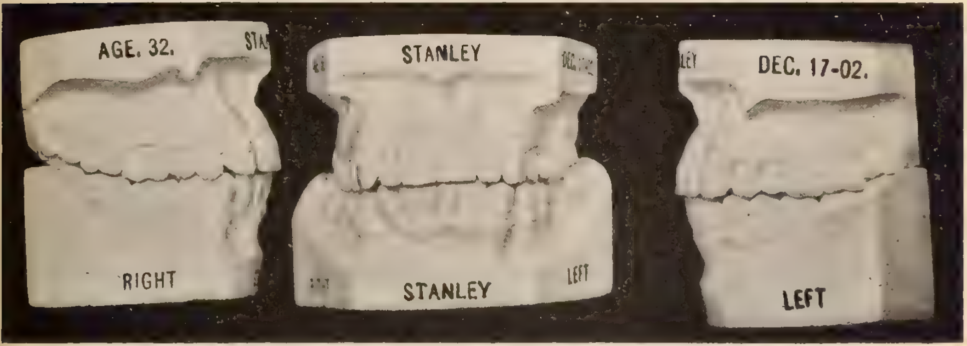


Plaster impressions were taken, new retaining plates carrying all the missing teeth made and placed in the mouth December 15th, 1902. During the four and one-half months consumed by the operation, each and every tooth was at all times under absolute control, and after the soreness of the



first few days had subsided, but little discomfort was experienced.

In the photographs of the face taken December 15th and reproduced here, the difference in the outline of the lips, especially in the profile, is clearly shown when compared with those of last July. The photographs of models taken December 15th and 17th show the position the teeth now occupy. Notice the improved occlusion of the molars on the left. A year's time will show a still greater improvement when the teeth have settled into their new position. The improvement in the expression of the mouth in conversation cannot be told by photographs, but must be seen to be fully appreciated.



## A GENERAL KNOWLEDGE OF DRUGS AND MEDICINES ESSENTIAL TO SUCCESSFUL DENTAL PRACTICE.

BY J. P. BUCKLEY, PH. G., D. D. S., CHICAGO.

Professor of Materia Medica, Pharmacology and Therapeutics, School of Dentistry, University of Illinois.

In attempting a discussion upon this subject, I fully realize the possibility of differing from the opinions of some dental practitioners; yet I approach the subject with no apology.

The day of empirical therapy is being gradually but surely relegated to the past, and we find rational therapeutics taking its place in dentistry as well as in medicine. To-day we should not be satisfied to know that oil of cloves quiets an inflamed pulp, eucalyptol disinfects a putrescent canal, oil of cassia discolors the tooth structure, etc.; but we should be desirous of knowing why these results are produced, or of ascertaining the constituents of these drugs that give them the desirable or undesirable properties. In fact, we should find the modern dentist showing the same interest in and investigating spirit for this particular field of work that characterizes him in other phases of dentistry. But is this usually the condition existing? How often do we hear men, who seemingly are progressive dentists, taking pride in saying that it is only necessary to know a few drugs—very few—in order to practice dentistry. They boast of the fact that in their medicine-cabinet you can find only such drugs as carbolic acid, alcohol, oil of cloves, arsenic, iodine, and a few others, and that they never have occasion or feel duty bound to administer an internal drug.

Now, in this connection it may be advisable, before dipping deeper into this subject, to stop long enough to ascertain the status of the dentist with reference to the internal administration of drugs and medicine, for the purpose of allaying pain, or correcting some derangement of an organ which directly or indirectly affects that area of the body over which we are supposed to be the watchful guardians.

## PRESCRIBING MEDICINES.

It is argued by some that the degree of D. D. S. is not broad enough to permit its possessor to prescribe or administer general remedies. In answer to this, I would solicit an examination of the curricula of the schools authorized and empowered by the different State legislatures to confer this degree. It will there be found that the students of most of these institutions are ground in the sciences of chemistry, anatomy, physiology, materia medica, bacteriology, pathology, and in fact all of the fundamental subjects, and most schools have now added physical diagnosis to their courses. Besides the didactic instruction, a thorough laboratory course is given in connection with most of the subjects mentioned, and in the dissecting-room the students are required to dissect a lateral half of the entire body. Who then, let me ask, is better qualified to treat patients coming to them, even should internal medicines be indicated, than the Doctor of Dental Surgery, who has studied the entire system and made a special study of the mouth and its adjacent parts?

Believing, then, that you will agree with me that a dentist not only has the legal right to prescribe internal medicine, but that it is his duty to do so when the case presents, let us consider briefly what a dentist's knowledge of drugs and medicine should be, and a few dental conditions where internal drugs are indicated.

### WHAT A DENTIST'S KNOWLEDGE OF DRUGS SHOULD BE.

First, a dentist should be thoroughly conversant with all drugs—physically, chemically, pharmaceutically and therapeutically considered. By this I mean that a dentist's knowledge of drugs should be broad enough to enable him, if necessary, to intelligently prescribe general remedies. It appears to me that a dentist does not comprehend his full duty unless he feels competent to met all cases which are presented to him; and it is often impossible to mitigate or allav pain, coming from a tooth or adjacent tissue, unless internal drugs be administered.

Second, in importance, to a thorough understanding of drugs and medicine, is a knowledge of prescription-writing. Every dentist should be intimately acquainted with the customary method of prescribing medicine. It would seem unnecessary to urge upon my readers the importance of always writing a prescription, and that correctly, when patients are sent to pharmacies for medicine; but an examination of the files of druggists and a few years of personal experience behind the prescription-case, is sufficient evidence to convince me that the average dentist is extremely negligent in this regard. It is not my object to discuss prescription-writing in this paper, but the above fact is too flagrantly conspicuous to be unnoticed.

## CONDITIONS WHERE INTERNAL DRUGS ARE INDICATED.

We will now consider a few pathological conditions, often confronting the dentist, where internal drugs are indicated.

Take, for instance, a putrescent pulp where some of the infectious material has been forced through the apex of the root by virtue of the gases generated in the decomposition, by instrumentation or otherwise, and an abscess is developing, which is characterized by that dull, dead, gnawing, grinding pain, produced by the pus trying to bore through the alveolus; that condition where the dentist knows, or should know, that counter-irritation gives but slight or temporary relief, in such instances as this we do not deserve the confidence placed in us by our patients, should we dismiss them without prescribing a general hypnotic, even if morphine must be given to control the pain. A prescription, however, should never be written for morphine, as the patient, being satisfied with the effect produced, could get the prescription refilled on the least provocation, and might, perchance, innocently acquire the habit. But in this case morphine could be given and the patient not know what drug had been taken. Now I wish to be understood as not advocating the injudicious, indiscriminate, or miscellaneous use of such drugs as morphine; but I do desire to say that where the drug is indicated it should be administered; and it seems to me that there is no condition where the effect of morphine is more beneficial, if judiciously used, than in the case to which I have called attention. There are other drugs that can be given with marked benefit, such as codeine (a milder alkaloid of opium), and many of the coal-tar preparations are valuable, among which I might mention phenacetine, acetanilid, etc. But opium, especially its chief alkaloid, morphine, is the one drug, par excellence, to stop pain, as this drug acts upon and controls the central nervous system. Alterative drugs are also indicated here. The best and most easily administered is potassium iodide, prescribed with some of the elixirs, syrups, or waters, to mask the taste.

Another condition demanding internal drugs is that of facial neuralgia, especially where we are unable to, at once, locate and remove the cause. How often do we find the facial, or seventh cranial nerve of patients, expressing untold agony as the result of some disturbance of the trigeminus or fifth; and do our best, we are unable, at the time, to locate the cause of the disturbance. Now, what shall we do in this case? Who wants to admit that they are unable to give relief? Shall we acknowledge our ignorance of a subject that we are supposed to know and turn the patient over to the physician, when the disturbance is purely dental, and let the physician do what every dentist should have done—administer a drug internally to control the pain until the cause can be located and removed? No, let pathological conditions, of dental origin, be treated by dental surgeons; and if the latter feels unable to treat these cases, then he should study his materia medica. I admit that we are sadly in need of good modern text-books on dental materia medica, but such a text-book would be more helpful to the dental student than the dental practitioner. All general text-books on this subject are for dentists as well as for other specialists of medicine. The drugs indicated here are the hypnotics. Again I must say that there is no drug that will serve us better than morphine, if intelligently administered, in these severe neuralgic conditions where we are unable to locate the cause and must control the pain.

### CONTROLLING NERVOUS PATIENTS.

Still another instance where internal drugs can be administered to the advantage of both patient and operator is when attempting to operate upon nervous individuals. It is often impossible to do satisfactory and permanent work for this class of patients unless some drug be administered, previous to operating, that will control the nervous system. I know of no class of drugs that will produce more gratifying results, when the nervousness is mental and caused by worry or dread, than the bromides. Potassium bromide, being the representative, can be prescribed in the elixirs, syrups or waters which dilute the drug and mask its taste.

### PAINLESS OPERATIONS DEMANDED.

The ever alert and suspecting public is making a serious demand on our profession to-day for "painless dentistry." By this I mean that dental operations are expected to be practically painless. There is no drug that will aid us more in meeting this demand, if properly used, than cocaine. There are but few dentists to-day, I believe, who do not use this drug for various purposes. By the judicious use of cocaine, bands can be fitted and crowns and bridges set absolutely without pain; live pulps can be extirpated, fillings inserted, and teeth extracted, with no pain, except, perhaps, the dread of having these operations performed, which is occasioned by past experience, and which almost amounts to pain. Now, valuable as this drug is in its local application, no dentist is justified in using it without a thorough knowledge of its toxic action; and in order to combat the toxic effects of cocaine, which produces alarming symptoms and an occasional fatality, we must be thoroughly familiar with the drugs that physiologically antagonize this action. This means the internal administration of such drugs as caffeine citrate, strychnine sulphate, atrophine sulphate and digitalis; for there is no one drug that will physiologically antagonize the toxic effects of cocaine.

Many other instances could be cited in substantiating the fact that a general knowledge of drugs and medicine is essential to successful dental practice.

### A PROTEST.

In closing this paper, permit me to enter a protest against the overflowing of our profession to-day with literature heralding the remarkable properties of some *new* drug or preparation. I had better say some *old* drug changed slightly chemically and given a new chemical formula which, in many instances, only symbolizes the ignorance of the advertiser and insults the intelligence of the dental practitioner. It is also to be regretted that we are forced to realize the eagerness with which some members of our profession lend their names in testifying to the remarkable properties of these chemicals and preparations, and which, when tested in actual practice, give a negative result. I do not wish to be understood as discrediting all these new drugs. Some are valuable and placed on the market on their merits by responsible and legitimate firms; but this cannot be truthfully said of the vast majority. I do not object to the use of proprietary medicines, the value of which has been established and the formula published; but a dental practitioner has no excuse for prescribing or using proprietary medicine the constituents of which he does not or cannot know unless resorting to chemical analysis. Especially is this true of preparations intended for hypodermic or internal administration. Our knowledge of drugs and medicine should be sufficiently broad to enable us to write an intelligent prescription for our own combinations, whether it be for a mouth-wash, a local anesthetic, or for internal administration.

# REGULAR CONTRIBUTIONS

## THE TREATMENT AND FILLING OF INFECTED ROOT CANALS.*

BY G. F. PARTRIDGE, D. D. S., BURLINGTON, VT.

We have heard about the old and worn-out subject of root canals, as well as our aged friend pyorrhea, until having a dental society meeting without them would be like trying to have a national meeting without a "scrap" between some of our western and eastern gentlemen. Why is it, then, that we can still spend any time profitably in discussing these hackneyed subjects? Simply because teeth treated under those headings still continue to be the source of probably more trouble and worry for the dentist than any others that come to him for treatment. I do not claim entire originality for the following method but would simply commend it to you as a method which, though perhaps not being in very universal use has in my case saved a vast amount of time and trouble. It goes without saying that root canals cannot be treated in a strictly *aseptic* manner, without first applying the rubber dam. Next we obtain *free* and *direct access* as well as is possible without seriously weakening the tooth. As far as weakening the tooth is concerned, it is *obviously* better to have a weak tooth than no tooth at all, which is very liable to be the result, if we handicap ourselves by attempting to "chase bacteria around corners and up blind alleys." The important step now, is to remove the putrescent contents of the canal, without forcing the least particle of infected material through the apical foramen. If we plunge a Donaldson cleanser or a cotton-covered broach into the canal, this, acting as a piston, is pretty sure to force some of the contents before it and through the foramen; pericementitis and abscess resulting. If we gently twist a fine spiral broach into the canal and remove a load of material, we are proceeding as much more rationally, as we would to use a screw to remove a cork from a bottle, instead of pushing it in with a sharp-pointed or barbed instrument. On removing the broach from the canal it is cleansed and dipped in that most perfect of cleansing agents *peroxide of sodium* powder and replaced in the canal. This powder, uniting with the moisture of the debris, decomposes into peroxide of hydrogen and caustic soda, at the same time liberating large quantites of nascent oxygen. As an oxidizing agent, and therefore a sterilizing and bleaching agent, peroxide of sodium is of about *ten* times the strength of ordinary pyrozone. Instead of *discoloring* the tooth as most of the essential oils used in cleansing root canals do, it dissolves the fatty and decomposing organic matter of the canal and *tubuli,* and by its effervescence, thoroughly removes them, leaving the dentin a beautiful white. Instead of coagulating over the surface of the albuminous tooth structure, sealing the germs beneath, as is the case with carbolic acid, chloride of zinc and other coagulating agents it *dissolves* even *coagulated* albumen and sterilizes wherever it reaches with its deep penetrating power. Neutralized by 10 per cent. sulphuric acid, the effervescence it produces, mechanically lifts the debris towards its easiest way of escape, the freely opened pulp-chamber, instead of forcing it through the apex. The peroxide of sodium afterwards neutralized by dilute sulphuric acid is repeated, followed by *50 per cent* sulphuric acid and bicarbonate of soda if necessary to enlarge the canal sufficiently, to reach the apex. To avoid passing through the foramen, the length and direction of the canal should now be marked on the same smooth broach which is to be used in filling.

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*Read before the Vermont State Dental Society, March 1903.

We have now at the same time thoroughly cleansed and deodorized, enlarged, bleached and sterilized the canal. The tooth itself, is as free from germs as it is possible to make it in the mere act of cleansing. But we have other infected tissues to deal with in this connection. In case of pericementitis which has proceeded almost, or quite, up to the stage of suppuration, we have germs located in the tissues beyond the end of the root, which must be disposed of. In case of a blind abscess, in which, judging from the pain and duration of the trouble, the amount of pus formed is very small; or as a precaution in a case in which the periapical tissues have been accidentally infected by forcing the broach with infected matter through the apex, we proceed in the following manner: Pure carbolic acid, a non-irritating and coagulating antiseptic, is pumped into the canal until it is full. Then sealing the cavity with unvulcanized rubber, gentle pressure is exerted with a blunt-pointed instrument, sufficient to force a small quantity of the medicament through the foramen. The instant pain is felt by the patient, the pressure is stopped, and excess thus avoided. This treatment is, in rare cases, followed by slight swelling, which is painless, however, and should cause no need of alarm. If the case is one of *extensive* blind abscess, an attempt is made to get an outside opening through the gum. If this is accomplished, the case is then treated, as is also that of a fistulous abscess, by first forcing (by means of hypodermic syringe sealed in the cavity) a warm solution of Listerine, or any mild anti-septic into the sac and out through the fistula. This is simply to make sure a complete circuit is formed, and is followed by peroxide of hydrogen, which boils out the pus and decomposing organic material. The tract is then flushed with pure carbolic acid or in very chronic cases a mixture of equal parts creosote and iodine. The canal is then immediately filled and at least one source of infection thus disposed of.

If an outside opening cannot be obtained, an attempt is made to evacuate the pus by means of suction. After evacuating the sac and cleansing the canal, a *more liberal* quantity of carbolic acid or in a chronic case with a large sac, creosote is forced into it. The canal is then *filled.*

It has been estimated that over 80 per cent of the dentists of the United States use for a root-canal filling either gutta-percha or oxychloride of zinc. Besides their many other disadvantages, neither can be used safely as an *immediate* canal filling in an infected tooth. To be an ideal, immediate root-canal filling, the substance must not only be asceptic when introduced, but must remain so, and must also be permanently antiseptic in its action. That is, it must be at the same time a treatment and a filling. The ideal filling should be easily introduced and to provide against emergencies, also be easily removed.

What is more foolish after going to the trouble of thoroughly opening and cleansing a small, tortuous canal, than to employ a filling which is very liable to clog the canal when half way to the apex, or at *least,* not fill it completely, leaving the remaining and most troublesome portion in a condition *inviting* unlimited trouble? Of this condition of the canal you have all found cases where gutta-percha has been used, and this, furthermore, being a vegetable substance is not even permanently asceptic. Is it a safe procedure to fill a tooth which has once abscessed, with either gutta-percha or oxychloride of zinc, both of them substances which in a tender tooth are nearly impossible of removal in case of trouble?

A root-canal filling, which, though perhaps not perfectly ideal, has brought *results,* during the last two years, *far* beyond my expectations, is a paste consisting of a powder and a liquid. The powder is made of equal parts paraform and iodoform, and the liquid simply 5 per cent formalin. Paraform with which you are doubtless familiar, is a white, finely crystalline powder made by evaporating formalin. It is a non-irritating and non-poisonous, and possesses three times the antiseptic strength of hydronapthol. Iodoform produces the effect of an antiseptic by destroying the ptomaines or poisonous products of bacteria, by means of the free iodine it releases. Its local anesthetic properties are of value in offsetting the possible irritation which sometimes comes from formalin. Formalin is called, by good authorities, the most valuable antiseptic used in dentistry. Its antiseptic strength is more than ten times that of pure carbolic acid, and greater than any other. dental antiseptic which does not discolor tooth structure. In spite of its coagulating properties, it is very penetrating in action, disinfecting to a sufficient depth in the dentin to dispose of what germs may not have been reached by the proxide of sodium. It is about the only agent which, sealed in a root canal, has an effect even upon the infected tissues beyond the apex. In spite of its great power, it is non-toxic.

We have in this paste, a filling material with which all root canals, large enough to admit the finest broach, can be filled and in a very short space of time. It is not claimed that all space in the canal is *perfectly* obliterated in *all* cases, nor is this condition found with any root-canal filling, but with this material no trouble results if it is not.

The root-canal paste should be mixed and ground together on the glass slab until a proper consistency is reached to permit it to be easily worked with a fine, smooth broach to the end of the canal. If the apical foramen is at all large it should be first sealed with a small pellet of asbestos fibre, saturated with the paste. When the apex is first reached there is sometimes a slight sensation of pain. This is very temporary, however, unless the mistake is made of forcing the material beyond the apex, in which case it is more prolonged, though not serious. When the canal is filled, the pulp-chamber and larger end of the canal are sealed with cement and the cavity filled with a temporary filling of gutta-percha, if time for a trial filling is available, or with a permanent filling, if it is not. The precaution should now be taken of painting the gum with iodine and having the patient wear a capsicum plaster over the root for a day or two after the treatment. There is so little trouble where this form of canal filling is used that the only case in which we need to be very particular about using a temporary filling first, is that of a chronic blind abscess. In case there should be any trouble, the root-canal filling is as easily removed as a simple canal dressing of any kind.

# THE VALUE OF ALUMINUM AS A BASE FOR ARTIFICIAL DENTURES.*

BY G. O. MITCHELL, D. D. S., ST. ALBANS, VT.

For about ten years I have been using swaged aluminum plates with rubber attachments for full upper artificial dentures and with so much satisfaction to myself and comfort to my patients that it is a wonder to me that so few aluminum plates are worn. It is with the hope that I may induce more to try them that I present this paper, and not because I have anything new to offer. I believe if we have an idea or method which gives us satisfaction and our patients comfort, it is a duty we owe to mankind at large and our profession in particular to present that idea to the members of the society and try to have them adopt that method to their satisfaction and to the comfort of their patients. I have never made an aluminum plate for a patient who has worn rubber, that they have not expressed their entire satisfaction with the metal plate and declared that they would not go back to a rubber plate at any price. I have been one of these myself, and have worn both, so I can speak as one, if not having authority, at least as one having had the personal experience which should give weight to one's opinion. We are all well aware of the fact that rubber plates keep the mouth over-heated; with a metal plate this is altogether different, as the metal being a good conductor of heat and cold, the wearer discovers that every breath of air that finds its way into the mouth cools the roof thereof until he scarcely realizes that he has a foreign substance there. Then, again, note the different conditions in the mouth which has worn an aluminum plate and one which has worn a rubber plate. The latter is soft, flabby, and has that parched, parboiled and puckered look caused by being kept above the normal temperature or by not being subjected to the changes in the temperature which are natural, while the former is kept at a normal temperature and is subjected to the slight changes which it would receive if there were no plate covering it, and it is as a consequence, hard, pink and healthy. One would suppose that the above advantages would be sufficient to create a demand for more metal than rubber plates, and I believe it would if our patients realized these facts, and I am sure it would if they had used both plates in their own mouths. The principal reason why they are not aware of these advantages is that the profession has not taken the trouble to teach them. The titles of Doctor and Teacher, originally synonymous terms, should be kept so, and if we are to bear with honor the title of Doctor we should teach our patients that which we believe to be the best for them in cases of prosthetic as well as operative dentistry.

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*Read before the Vermont State Dental Society, March, 1903.

### BUT LITTLE ADVANCE MADE.

It seems to me as I look back over the twenty-one years that I have been in practice that we have made very little, if any, advance in supplying artificial dentures for those who have been so unfortunate as to loose their natural teeth. There seems to have grown up of late a distaste for the making of artificial dentures, a false notion that it is beneath the dignity of the dentist to do such work himself; hence it is too often put upon the assistant or let out to the dental laboratories, who, while they may do good work, have not seen the patient, and therefore cannot do that artistic work which the dentist himself, who has seen the patient and studied the temperament and the general outline of the features, could and should do. This accounts for the wearing of so much ready-made dental work; work which shows that the teeth are false as far off as the mouth can be seen; work which bears about the same relation to the artistic work of some dentists that the ready-made clothing bears to the fine tailor-made garments; work which, while it may fit fairly well and be well put together, lacks that artistic blending which makes it seem to be a natural part of the wearer and not something bought out of a job-lot and looking as if made for some one else. It may be on account of these false ideas that dentists have not educated the public up to the value of metal plates over rubber. It may be that they think it beneath their dignity to teach anything about artificial work. It is a fact that we have had very few papers at our society meetings upon artificial dentures, and seemingly given too little thought to this branch of our profession. Let us consider for a few moments some of the requirements of a base for artificial dentures, and at the same time see if aluminum does not come as near as anything now in use to fulfilling all the same. The American people are practical enough to look for strength and durability first; therefore I will put these as the first requirements. I am inclined to believe it was just here that aluminum plates first got a black eye from which they have not as yet fully recovered. The first aluminum put out was not as pure as that which we now get, and consequently did not wear as well. Again, many dentists did not understand working it and annealed it as they did gold, and so burned it, thereby destroying its wearing qualities. In annealing aluminum, one must be very careful not to overheat it, for any place that is burned is very sure to dissolve away in the mouth. I have aluminum plates in the mouths of some of my patients to-day doing good service and looking as well as when I first put them in, that have been in constant use for ten years. I have never, so far, had one of my aluminum plates come back to me broken or with holes eaten in it or with the rubber cleaving from the metal. I speak of this in no spirit of braggadocio, but simply as a proof of the durability of aluminum plates when carefully and properly made.

As a further proof, I would quote the following from the "American System of Dentistry," Vol. II, page 725, and quoted there by the author of a short paper on aluminum from Dr. A. H. Forbes, of Ithaca, N. Y.: "Over twenty years' experience has proved to me that for full artificial dentures aluminum plates with rubber attachments have no equal.

"The lightness of aluminum and the fact that it is one of the best known conductors of heat and electricity are the chief points in its favor. I have found it perfectly unoxidizable and fully as durable as gold in the mouth."

Taking this statement of Dr. Forbes, which was made before the American System was published in 1887, together with my own experience and observation, which has extended back nearly as far as that, I am of the opinion that aluminum plates properly and carefully made will be as strong and durable as any. Next to durability for full uppers (and I will say right here that for full lower plates I like the cast-metal better on account of the extra weight) come lightness and conductivity, and here is where aluminum shines, here is where it takes the lead of all plates known to us to-day. Continuous gum and gold plates are not to be compared with aluminum when the question of lightness and conductivity are considered. It is the lightest metal we use, having a specific gravity of 2.5 and is the best known conductor of heat, cold and electricity. Another very necessary requirement is that the plate can be easily kept clean, will hold its color and finish and not tarnish. We all know how rubber plates gum up and how hard it is to keep them perfectly clean, while aluminum are very easily cleansed. It is a well-known fact that silver and even gold plates in some mouths will discolor and tarnish; not so with aluminum, it is unalterable either in dry or moist air, nor is it acted upon by the sulphur compounds, by concentrated or dilute nitric acid, either hot or cold, or by dilute sulphuric acid, and is only affected by such agents as hydrochloric acid or other chlorine compounds or by boiling solutions of potassium or sodium hydrate. It is also odorless and tasteless, which is another improvement over rubber. Perhaps as the last requirement we will put ease of manipulation and inexpensiveness. Aluminum while harder than tin is softer than copper, its hardness being about that of pure silver. It is malleable and ductile, and may therefore be rolled into sheets and with care swaged to fit any mouth. As to expense, aside from the time taken in swaging, it is as cheap as anything we use and when your patient has once experienced the pleasures of a well-fitting aluminum over a rubber plate they will pay you well for the extra work and never heave a sigh.

### LAZY WORK.

It almost seems at times as if the introduction of alloy fillings into operative work and rubber plates into prosthetic work had had a tendency to make the profession lazy, for, how often do we see cavities cleansed out and alloy filling stuffed in, and none too well finished, where a well-finished gold filling would have done so much better service and the patient would have been perfectly willing to pay therefor? The only reason we can offer for the dentist not putting in the gold is the fact that he was too tired or had not the time.

It was so easy to put in that alloy filling, and it would be quite an undertaking to put in a gold filling. So when a patient comes in for an upper artificial denture it is so much easier to make a rubber plate than a metal, that the patient goes away to have his mouth drawn by wearing a rubber plate which he is made to believe is as good a substitute for his lost teeth as the advanced dental profession of to-day can supply, and all because the dentist is too tired or has not the inclination to make him a well-fitting and comfortable metal plate.

Practice makes perfect, and we all know that what seems quite a task to us the first time we try it becomes an easy operation after a little practice. So swaging an aluminum plate may seem like quite a mountain to the man who has never tried it, but after he has made one or two it will not seem to be much more than making a rubber plate, and you can easily get double the prices therefor. With the devices which we have now for swaging metal plates it needs be no bugbear to any man.

### METHOD OF MAKING ALUMINUM PLATES.

With the hope that I may make this appear easier and induce some to try it, I am going to give a short sketch of my method of making aluminum plates. Having got a good plaster impression, I deepen the rugæ by scraping with a spoon-excavator, then coat it with some good separating solution (I use silex, and after that is dry, a coating of Johnston's ethereal antiseptic soap prepared by Parke Davis & Co.), take a piece of sheet lead about two inches wide and ten or twelve inches long and put it around your impression so as to run your model to a thickness of two inches, which is about the thickness you want your die to be. When the plaster of your model has set and you have separated your impression from it, proceed to trim your model by scraping a little over the soft parts in the mouth, and if you want an air-chamber put it on the model with wax in such shape as you want it. I very seldom use a regular air-chamber, but usually put three or four thicknesses of tin-foil on the model over the hard ridge which we find along the center of most mouths. I then take the small end of my wax spatula and mark the outline of the plate by cutting a little groove all around the edge where the plate when it is finished will end. This groove is made a little deeper over the soft parts in the mouth than over the hard, and the edge chamfered off towards the center of the plate. This will make the plate fit the mouth closely all around the edge and back, and help to turn the upper edge later on. Now take wax and wax out at nearly right angles to your model along the groove which marks the top of your plate. This also will help in turning the edge of the plate on your zinc model later on. Now with your Haw's flask, Chase's molding sand, and careful manipulation, you will find very little trouble in getting a good mold of most any mouth, and while you are making the mold your zinc can be melting so that you can in a short time get your zinc die and two or three lead counter dies. Where the roof of the mouth is well arched I think three counter dies are necessary, one to swage the plate up into the arch, one to just turn it over the edge of the alveolar ridge and one for the final swaging. We have now arrived at the most important part, the part where the most care and the exercise of the best judgment comes in and that is the annealing. Aluminum works easily and does not require a great deal of annealing, two or three times is enough for most cases. But don't forget for a moment that success or failure, as far as durability is concerned, may depend upon whether you get your plate annealed just right or whether you let any small part of it remain in the flame too long and get overheated. To get the best results the plate should be heated gradually, evenly and not too hot, and allowed to cool off gradually. Do not try to cool it off quickly by dropping it in water as you are liable in that way to spoil your plate as far as wearing qualities go. Some recommend coating the plate with oil and burning off the oil, others, too, put hardwood sawdust on the plate and heat from below until the sawdust is well browned but not let it take fire., It seems to me that in either of the above ways one might heat the plate more than is necessary. With a little care and practice by passing it back and forth over the flame you can heat it sufficiently without over-heating any part. The swaging is done in the usual way, only requiring a little more care in getting up into high arches without splitting the plate.

### TO PREVENT DENTING THE BASE.

I will only allude in passing to two things which I use to prevent denting the aluminum, as it dents more easily than gold. The first is the mallet which I use, it is neither handsome, ornamental, or very well made, but it has done me good service for the past ten years and will not dent a plate as a horn or wood mallet will. It consists, as you will see, of a piece of hardwood coming nearly to a point at one end and being larger and well rounded at the other with a handle through the center. I drilled into the pointed end and glued in a piece of ordinary sole-leather and wired it around the sides to prevent its splitting, I then covered the round end with two or three thicknesses of rubber dam and put over that two thicknesses of kid, tacking it around the sides. The other device is the ordinary cambric coming between the sheets of vulcanite rubber; after wetting it to take out the starch I put a piece between the plate and die on all swagings except the final, and thus keep the zinc die from denting the palatine surface of the plate. Having the plate swaged so that it fits the plaster model well, we will now proceed to turn the edge which will give it a finished look and help hold the rubber attachment. This is very easily done by means of the bench-rope to hold the plate in place on the die and these brass instruments with rounded points, a light hammer and a pair of contouring pliers. The bench-rope is a small piece of rope passed through two holes in the bench about three inches apart and spliced together under the bench so that you can set the die with the plate thereon between the two holes in the bench and put the rope over the plate holding it in place with the foot in the rope below the bench. With the little brass instrument and your hammer, swage the plate into the groove in the model all around the edge. The little instrument will be found handy also in swaging around the air-chamber, if you use one. Next take the plate off the die and with the contouring pliers you can turn the edge by careful manipulation without in any way affecting the fit thereof. Trim the edge down to the width you want it, try the plate in the mouth, and if there is any place where it does not fit the mouth closely, trim off from the plaster model at that point, put your plate on the model and under the bench-rope to hold it in place and with the brass instrument swage it into place. When your plate fits the mouth to your satisfaction, put on your wax, take your articulation and mount in your articulator by putting wet tissue-paper in the alveolar ridge so that you can take your plate off without any chance of bending; mount and wax up the teeth as you want them to be when done and you can here try it in again and see that they are set just as you want them. Just before investing, take a drill in the engine and drill twelve or fourteen holes near the edge of the wax and the plate, counter-sinking them on the inside to hold the rubber near the edge. Wax up these holes, invest and separate in the usual way, and after washing out all the wax with hot water, take an engraving tool and spur the surface covering the alveolar ridge as far as it is desired that the rubber attachment shall extend. Pack, vulcanize and finish in the usual way, and you will have a plate as good as any and better than most. Try this sometime and you will not be sorry and your patient will rejoice in the use of a comfortable plate.

## THE EVOLUTION OF DENTISTRY.*

BY E. N. TRENHOLM, D. D. S., ISLAND POND, VT.

That dentistry, to some extent, is an ancient art cannot be questioned, but so meager are the references to it, in what remains that is authentic, that we may dismiss it from consideration at this time, as nothing of value has come down to us from antiquity.

Dentistry as a science is, strictly speaking, altogether modern.

At Baltimore, in 1839, was organized the first dental school of which we have any record, and from that period dentistry as a scientific profession began. Before this time dentistry was looked upon as a trade, but so exclusive were its followers, so afraid were they of competition, that, governed by selfish and sordid motives, they carefully guarded its secrets regardless of the rest of the world.

The next event in the history of dentistry, and one worthy of being called the most notable discovery of the century, was the discovery or invention of "anesthetics." The credit of the discovery of anesthesia with ether is generally given to Doctor Morton, of Boston, a dentist, who in 1846 succeeded in demonstrating to a skeptical world anesthesia by etherization.

I think, however, that equally great honor is due to Doctor Horace Wells, of Hartford, who some two years previous to this succeeded in performing painless operations in dentistry and surgery by the administration of nitrous oxide, given for this purpose.

Between 1855 and 1860, crystal gold and the cohesiveness of newly annealed gold foil was discovered, thus overcoming a property which was previously considered detrimental to the use of gold as a filling material.

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*Read at Vermont State Dental Society meeting, March 20, 1903.

Next came the improved mallet, the rubber dam and dental engine.

Also about this time by the persistent efforts of Dr. Riggs, a course of treatment for what is known as "Riggs disease," a disease that until this time, had defied treatment and had been looked upon as a universal affliction, or at least, as incurable.

At this time the dentist could not go to the supply houses and order any shape of instrument as at the present, and it was necessary for him to be an expert in the working and tempering of steel, which outside of a practical course in our colleges has become almost a lost art to the profession.

The increase in the number and efficiency of our dental schools, the excellent laws, the faithful and conscientious work by the members of our different examination boards, to say nothing of the number of journals, and periodicals which are published throughout the land have done much to elevate the profession to its present rank as a special branch of surgery.

The dentist of the present time is required to make appliances that will restore the normal contour of the face in cases where the whole or part of the bones forming the framework of the face may have been removed by disease or accident. Artificial noses, and lips, as well as all dental appliances are attempted by none except the specialist in dental surgery.

To the dentist of to-day is left the task of surgical treatment for congenital cleft palate, either simple or accompanied by harelip. This treatment when applied to very young children has been so successful that they have lost even the slightest traces of the deformity.

One of the greatest aids to the dentist in restoring the normal facial lines and contours, is the so-called porcelain art. Broken-down teeth are restored to usefulness, by porcelain crowns so constructed with regard to shape, size, and color as to exactly resemble the remaining teeth.

Also, we have fillings of porcelain which consist of cavities filled with an inlay of porcelain exactly matching the shade and contour of the natural tooth, so as to be almost unnoticeable.

This branch of dentistry requires a great amount of artistic skill and taste, accompanied by a large amount of perseverance on the part of the aspirant who is to become an expert.

Electricity plays a most important part in the daily practice of the modern dentist, who must be thoroughly acquainted with it in its different modes of application and he must also have a practical knowledge of physics.

Not only does electricity supply light, and power to operate our lathes and engines, but it supplies heat to sterilize delicate root canals and modify the action of drugs.

It also is used to anneal precious metals and supplies the extreme heat which makes "porcelain art" a possibility.

The X-Ray is also being used a great deal in connection with the diagnosis and treatment of diseases of the face and jaws.

Notwithstanding its varied applications at the present time, electricity is destined to play a far more important role in the future.

# PROFESSIONAL AND LITERARY EDUCATION.*

BY DR. C. H. KENT, BARRE, VT.

In presenting this paper, I shall make no claim to originality, neither shall I expect to impart to you anything strikingly new, but rather that, by refreshing your memories, we may glory in the realizations of the past, and find pleasure in anticipating the future. No profession, art or science is today making more rapid strides than that of dentistry. With the ever-increasing desire for knowledge, and the higher general standard of education among the masses, we are confronted with the fact that, to obtain and hold the proper respect of our patients, we, as a profession, must be *students,* ever open to conviction, ready to grasp the full meaning of theory and practice, that we may render our services with a comprehensive knowledge of what is absolutely best. With our public schools rapidly advancing in methods, and manual training, and the importance of oral hygiene and dental service more strongly impressed upon the minds of the young, we should prepare ourselves to do *our* part. In keeping with such general advancement, our colleges have made rapid progress until now, through the efforts of the National Association of Dental Faculties, they have established such preliminary education with a four years' course, as will equal that of any of the professions or sciences. That there may be no stigma upon our profession, and that a diploma may have its full worth, we are constantly watching for such bogus and illegitimately-issued papers as those recently coming from the St. Luke's Hospital, Mich. Through the untiring efforts of our societies and State examining boards has the march of progress been sustained. You are all no doubt well acquainted with the long controversy over the Huxman German-American Dental College. How, through the efforts of our German consul, and certain dental journals, the State board of Illinois was reorganized and suits instituted against the old members for misconduct in office. Upon refusal of the new board to grant license to a graduate of this college, declaring said college not reputable, appeal was taken to the courts, and the decision of the courts sustained the board, thus again showing the discretionary power of the board, over what is considered reputable colleges, and sounding the death-knell of *another* diploma-mill, which has since closed its doors and dropped from existence. We would do well to take a lesson from this, and see that our laws are so constructed as to give the Vermont board equal authority.

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*Read before the Vermont State Dental Society, March, 1903.

### AN IMPORTANT ADVANCEMENT.

Another most important advancement is the recognition of our profession, as such, by appointment to the army. It was a long and earnest struggle and the results not all that could be desired; but we are encouraged, and by our well-directed efforts will pursue the work to the end, that *our* members may stand side by side with the surgeons and physicians in both army and navy.

### INTERCHANGE OF LICENSE.

The old question of interchanging State licenses is still far from a satisfactory settlement, but we take courage from the past and expect much good to come, especially through the efforts being put forth by the National Association of Dental Examiners.

### SCIENTIFIC RESEARCH WORK.

One of the grandest works, and one that, if achieved, will undoubtedly tend towards the advancement of dentistry from a scientific standpoint, was, I think, originated in the New York State society, and, be it said, much credit is due Dr. Henry D. Hatch for his untiring effort in bringing forth the desired results. I am speaking of the plan for thorough scientific work tending towards absolute results. You may all be acquainted with the work being done along this line, but, as this paper is more especially a review, I will ask your indulgence, that I may briefly state the progress of this work. From the desire of the New York State society to formulate a plan for better scientific research, at their meeting May last, they started a fund and founded a committee for such purpose, and arranged to present to the National Dental Association, through Dr. Hatch, if I am not mistaken, the matter of forming a committee from that body, to confer with the trustees of the Carnegie Institute at Washington, which, as you are well aware, was founded for the purpose of scientific study and research, and backed with ten millions of dollars, with the purpose in view of obtaining representation for our profession, and the benefits of its unlimited resources. It was while attending the convention at Niagara Falls that I became especially interested in this plan of work, and although as yet nothing definite has been accomplished, I am able to state, through the courtesy of the committee, that they are prosecuting the work and forming a definite proposition to present to the trustees, and as our officers have undoubtedly been communicated with on the subject, I will only state that it is the earnest wish of both the National Association and the committee from the New York society, that every State society appoint a committee for this work.

In a letter from Dr. Litch, chairman of the National committee he says: "I hope that a committee from Vermont will be appointed, and that it will co-operate with the National, as a number of other States have already done." Dr. Hatch also writes: "In case this plan should fall through, the committee should still be appointed that such work of research might be more systematically continued through our own medium." Gentlemen, this is a question of great importance, for the work to be done along these lines is almost unlimited. Let us give it our hearty commendation and support.

### DENTAL LITERATURE.

Far be it from me to criticize the past literature of our profession, but it is with much satisfaction that I point to the great general advancement, both in periodicals, text-books and society papers. There have been many new and revised editions of dental text-books during the past year, and I will only take your time to say that if we wish to keep in the procession, we must be students all our lives, ever watchful for the latest and highest authorities on all subjects with which we have to deal. As our dental periodicals are, to a greater of less extent, reports of our societies and papers there presented, you will at once understand how important that these papers should lack as much as possible those features of tiresome reiteration. It is a waste of energy on the part of the writer, and an obstruction to the advancement of our ambitions, by calling on our time to go over again and again that which is established history and proven facts.

In closing let us make this deduction: With the increased educational advantages, empirical dentistry becomes less conspicuous; professional and literary advancement more prominent, and the systematic meetings of our members with the ever-discriminating profession has produced greater changes and better results in the past year than history before has ever acknowledged.

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## PRESIDENT'S ADDRESS.*

### BY J. A. PEARSON, D. D. S., BARTON, VT.

Members and guests of the Vermont State Dental Society, I am pleased to meet you, and in behalf of the society extend to you all a hearty welcome. I prophesy a pleasant and profitable meeting, this, the twenty-seventh annual gathering. Thanks to the executive committee and those assisting them.

I believe this society has done and will continue to do, a great work for the dentists of Vermont. We should feel a just pride in the fact that our meetings have been considered by good authority among the best held in New England. This society has had a prosperous and continuous growth for more than a quarter of a century, largely due to the fraternal and professional feeling always exhibited among its members. That unselfish willingness to help each other, has not been confined to the members of this society alone. We have thrown open our doors, inviting all who would, to enter. Thanks to the many who have accepted the invitation, for we have received much good from them.

It is noble to be a good dentist, and nobler still to be a professional man and a good dentist. We may be members of a profession and not be professional.

I believe our associations with each other in our State organization, has helped to make us more professional. I believe it to be the duty of every reputable dentist to become a member of his State society, and help to support the institution that is helping him and the profession.

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*Read before the Vermont Dental Society at Burlington, March 18-20, 1903.

I would recommend, also, for the consideration of the members of this society, a membership in the Northeastern Dental Association, an organization which acknowledges the several State societies as its only legitimate source from which to take its members, and by so doing, acknowledges the sovereignty of the State societies, and working together for the best good of all.

While we have been improved and helped, I do not believe this society is doing its full duty until it takes some step toward the education of the masses of the people as regards the sphere of the dentist and his standing as a professional man.

The influx into the dental profession has not been more than the demands of the people should or would require did they understand the importance of the dental organs as the average dentist or the more intelligent part of the community do.

Too often we are considered by the masses of the people, as a profession, only a little better than the ordinary mechanic. In referring to the masses of the people, I do not mean the very lowest and ignorant, but the average people we meet in a community.

As for our incomes, as compared with our outgoes, I question if the majority of the dentists of Vermont are much better off than the average mechanic. We cannot expect much improvement along this line until the people understand we are something more than a trade and are not in the business from a commercial standpoint. We, ourselves, are to blame to a great extent for these conditions. We cannot expect intelligent people to respect us as a profession when, as in some localities where prices are as low as any one can afford to do thorough work, someone cuts prices and holds out extra inducements by way of warrants and transportation from one town to another to get the work. No matter how insignificant this man may be in the profession, he has an influence in the community in which he lives, and the greater the influence, the more injury he does the profession, and himself more injury as a professional man than if the whole profession were in the rudest manner to insult him.

At the same time he gives the profession an insult, and does it an irreparable injury.

The idea seems to prevail with some that just in proportion as our increased facilities and helps enable us to do more work, they must cut prices, and by so doing makes the profession in the eyes of the people a commercial institution. There would be just as much sense in a surgeon, because he has an improved instrument whereby he could perform a particular operation quicker than usual, to cut his price, or a physician his regular established fee because he is fortunate enough to have a speedy horse, or an automobile whereby he can see more patients in a given length of time.

Our expenses have increased fully in proportion to our facilities for more rapid work.

High quality of work and professional worth is what should recommend us to the people.

## A SHORT, EASY METHOD OF BLEACHING.

BY DR. G. F. BOWMAN, TIDIONTE, PA.

In presenting this method to the profession, I do not wish to make any claim of originality, as we all know how difficult it is to find anything new, although so far as I am aware, this particular method is new. I wish, however, to give credit for the origin of the idea to Dr. Hofheinz, of Rochester, who, if my memory serves me correctly, called the profession's attention to the use of pyrozone and a heated instrument for bleaching enamel stains on the labial surface of the anterior teeth.

The objections to the use of pyrozone has always been, first, being an ethereal solution it is extremely difficult to keep; second, its slow action when used alone; and third, its expense.

As a substitute for pyrozone, I use the ordinary commercial peroxide of hydrogen prepared by evaporation over a water bath to about one-fifth of its original bulk, which gives a solution of peroxide of hydrogen of approximately 15 per cent. strength.

This solution answers every purpose apparently as well as pyrozone, is easily prepared, is a much more stable solution, and costs very much less.

I usually make up about one ounce and keep in glass-stoppered bottle where it seems to retain its strength very well.

After carefully applying the dam in the usual manner and gaining thorough access to the coat, remove as much of the canal's contents, mechanically, as possible, and then pump the root full of the peroxide of hydrogen solution and plunge an Evan's root-canal drier, heated to redness, into the root, holding it there until the patient feels a slight sensation of heat; remove, pump in more peroxide, 15 per cent., and again plunge root-canal drier into root, heating root-canal drier each time.

In a very few applications you will be gratified by a complete bleach.

The only precaution to be observed is, not to hold the root-canal drier in root long enough to overheat the tooth; the patient's sensation of pain will very quickly warn you of this danger.

This method is not applicable, for obvious reasons, to teeth which have been previously treated and the roots filled, but where it is indicated, it shortens the time of the operation, reduces the cost and removes the annoyance of finding your pyrozone evaporated just when you want to use it, and even should your 15 per cent. solution be not right at hand, it is easily prepared in a short time.

# CURRENT ARTICLES

[Condensed for THE DENTAL SUMMARY readers.]

## A RATIONAL METHOD OF MAKING PERFECT MATRICES FOR PORCELAIN INLAYS.

### BY R. K. BELDEN, SAN FRANCISCO.

We have first to obtain a perfect impression of cavity with a dental cement. Now we are to produce a polished copper shell which is a perfect reproduction of the surface and form of the impression we have taken of our cavity. This may be done in several ways. I will give two, either of which should obtain equally perfect results. Upon the cement impression we brush finely powdered graphite, filling the pores of the cement. We now pour over this melted wax and graphite. When this has hardened thoroughly through cooling in cold water, the original impression is dissolved out, leaving a reproduction of our cavity in wax and graphite. This is polished with fine graphite by means of a fine camel's-hair brush, as in electrotype methods. This adds no perceptible film to the surface, nor can it blunt the finest lines, as can be proven bv any one who sees the half-tone copper plates produced by this means. This is then placed in our copper-plating solution, and by electrical deposition a film of any desired thickness is placed on the walls of our cavity in the wax and graphite. The wax and graphite are then boiled out and we have a polished copper shell, which will fit as perfectly into our tooth cavity as the original impression material did. Upon the upper surface of this copper shell is now deposited by electro-deposition a film of gold or of platinum, as we may desire, and of any thickness desired. We now dissolve the copper with nitric acid, and there remains a perfect duplicate of our tooth cavity, surrounded by walls of gold or platinum, as we desire. In this matrix we bake our inlay, and after stripping matrix or dissolving it in aqua regia the inlay will be found to fit the cavity perfectly. While we have to make several steps in this process, yet the variable skill of man is eliminated and we are always sure of obtaining perfect results.

The second method is the same, except that the impression in cement, after being polished with graphite, is set in a machine constructed with a rack and pinion, so that two plane surfaces move in perfect parallel lines toward each other. On one surface is placed our wax and graphite, on the other our impression. The impression is then firmly imprinted into the wax and graphite and then withdrawn. The graphite in the wax prevents the slightest drawing or sticking of any part of the impression. We then proceed with the forming of the copper shell, the same as in the first method. The great difficulty and uncertainty of obtaining perfect matrices is, I think, solved by this method, it being only necessary to obtain in the first place a perfect impression of the given cavity. Much of the process can be carried out by our assistant in the laboratory, giving us more time and thought for the artistic requirements of our porcelain filling. With this method the cement fills the office of retaining the filling by adhesion, and to a lesser degree than any other of supplying what I shall call temporary contact points (the cement). Of course, there will be some "inter-globular spaces" scattered among the real contact points where a molecule of cement fills the space. I think, however, that the fit obtainable by this method is so nearly perfect that the real contact points will interpose a barrier to the dissolving out of the otherwise temporary contact points (the cement) and result in more durable fillings of porcelain than have yet been possible to obtain, except, perhaps, where cavities are round. With the method of using the porcelain rods as I have described and the electro-plating method for all others, there is every reason to believe that the mechanical adaptation of porcelain to cavity walls will be brought to a high state of perfection, and in one or two generations we will not be recognized in Europe as Americans because of the gold in our teeth.—*Extract Gazette.*

# PORCELAIN AS A FILLING MATERIAL.

BY W. T. REEVES, CHICAGO.

We have passed the experimental stage. Porcelain as a filling material has come to stay. It will not answer any longer to put off inquiring patients with the stock remark that it is only a fad, that you do not advise their use, and that their particular case is one in which porcelain would be a failure. Fads develop quickly and pass as quickly. Porcelain inlays have been fifteen years and longer in reaching their present stage of development, and have won their way against the most stubborn opposition that was ever waged against any new material or method brought before modern dentistry. The way has been blazed by pioneers in the work, and methods and material have been developed to a high stage of completeness. It only remains for the profession at large to enter upon the work, and enter it under conditions that are favorable to success. One thing they must realize, and that is, that the mere getting of a furnace, an outfit of bodies, and a little platinum, and reading a few articles on the subject in the dental journals, is not all they will have to do to start them on porcelain inlay work. They must prepare themselves by good technic instructions, then careful, thorough dummy work in the laboratory. The work is not so difficult as to be a bugbear if one but enters the path from the right direction and passes along with a sure, steady step. There is a good deal of pessimism about the foregoing, and by nature I am an optimist, and cannot refrain from giving you a little of that optimism in connection with porcelain as a filling material. I am going to make this broad statement: There are scarcely any cavities in which gold can be utilized that porcelain cannot be successfully used, and there are so many places and conditions under which gold cannot be used and where porcelain will be a perfect material with which to restore lost tooth-structure, that I place it first in point of applicability.—*Extract International.*

# SELECTION OF COLORS FOR INLAYS.

BY W. T. REEVES, CHICAGO.

It is the general practice to select the color as one selects a facing for a crown—by taking the shade-guide furnished with every outfit of bodies and selecting the color that seems to be a match for the tooth. In selecting a facing general effect is aimed at and the selection is one that harmonizes with the adjoining teeth. A person may select a facing that, placed between two natural teeth, cannot be detected, but if a corner of that facing is joined to a corner of either adjoining tooth it will not match at all, because each tooth has different underlying colors. It is the underlying colors that must be looked for, and it is just in proportion as one is able to see these underlying colors, and then to reproduce them in the inlay, that he will be successful. A typical light yellow tooth will probably have either a gray or a blue tinge, or both, in its inside substance. These same colors should be reproduced in the inlay, or it will not be a perfect match. I use the shade-guide not to get a match for the tooth, but as an aid in looking for the underlying colors and the depth of those colors.

If you see yellow, brown, blue, gray or all of them, hold the shade-guide to the tooth and determine the strength of these colors, also the order in which you will use them to get the effect you want. Make a memorandum of this. For instance, you desire to match a typical light yellow tooth; the cavity extends from neck to cutting edge, involving at the cutting edge a third (more or less) of the width of the tooth. Yellow No. 2 on the Brewster shade-guide looks to be a perfect match for the tooth, but at the neck you will find the yellow a little deeper, with a grayish tinge through the center third of the tooth and a bluish tinge towards the cutting edge; you will find on looking closer that the blue seems to reflect through a gray and that there is very little yellow in this part of the tooth. My memorandum would read thus:

"Patient A.—Foundation, cervical, No. 3 yellow; center, No. 6 gray; cutting edge, No. 9 blue under No. 5 gray; over all, No. 2 yellow, with No. 11 for enamel."

I would proceed to use them as follows: Build my foundation; the yellow, gray and blue would then be put in their respective places and baked as one layer; have the three bodies properly moistened and arranged on a slab so that you know which is which; take as nearly as you can judge the proper amount of each and place at their respective places; then draw a gnarled handle gently over the pliers to bring the moisture to the surface and cause them to run together; cease instantly, and you will have a perfect blending of the colors; if you continue to jar, you will get a mixture instead of a blend. Allow the body to dry, and bake.

Shrinkage will necessitate the addition of more of these colors, and this time, as you want gray over the blue, you will use only No. 3 yellow and No. 5 gray; have the bodies ready and proceed as before; this will still further harmonize your colors, because the yellow will extend still farther down your inlay and modify the gray that was put on in the central portion, while the blue of the lower third modifies the gray, so that when they are all covered with the lighter yellow you have such a harmonizing of colors that you can't tell it from nature's work itself.

If shrinkage causes any lack of contour, and it almost always does, cover all with a layer of Brewster's XX body. This is a new product. You cannot say it is of any particular color unless you call it enamel color. So far it seems to fill its mission perfectly.

You now have a completed inlay that I believe comes the nearest to reproducing nature of any means or methods heretofore attempted. A still further artistic effect can be obtained by the use of what I call primary colors. They are as deep as ivory black, Prussian blue, Van Dyke brown, burnt ochre, etc. They are high-fusing bodies and not paints, but they must be used as paints would be, by putting them on mixed with oil, for you cannot put them on thin enough or smooth enough when mixed with water as you do ordinary bodies.

These are a set of colors that were made for me by Mr. Brewster, of Chicago, and are meeting a long-felt want.

With them you can imitate that steel-blue line you so often see just above the cutting edge, also tobacco-stained teeth and the white and yellow mottled teeth. These effects have heretofore been impossible, but with the primary colors they can be reproduced with lifelike naturalness. — *Extract International.*

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# EVILS OF FAULTY MASTICATION.

### BY C. N. JOHNSON, CHICAGO.

Aside from the resultant pain induced by exposed pulps and acute alevolar abscesses, and the constant absorption of pus into the system from chronic abscesses, there is another train of evils following neglect of the deciduous molars which is even more far-reaching in its effect than either of these. This relates to the habits of mastication formed during youth as influenced by the condition of the deciduous teeth. If a deciduous molar is allowed to decay to any depth, it naturally becomes sensitive to the impact of food. It takes the little patient but an instant to recognize the fact that to bite on that tooth results in discomfort, and a few twinges following the attempt to masticate on this particular side of the mouth are sufficient to relegate all of the food to the opposite side. Unilateral mastication does not subserve the full functional activity which nature intended in the proper management of the food by the teeth in its preparation for the stomach. More particularly is this the case in the mouths of children, where the total area of mastication is not very great, and where any reduction of this area proves serious. But worse than this, if a molar on each side of the mouth becomes involved—as is frequently the case—there is a very material crippling of the process of mastication, and the patient, not having arrived at years of accountability, has only one resource—the avoidance of mastication. Mastication hurts, and the only way to keep from being hurt is not to masticate. The result of all this is that the child begins bolting the food without chewing it, and the ultimate effect is to form a habit which may last through life.

If we study carefully the methods of mastication among adults, we shall find that there is a great variation in the thoroughness with which this function is performed—even among those who have relatively the same masticating equipment. If two individuals having equally good teeth show a striking variation in mastication, it must be due wholly to habit, and it is only reasonable to suppose that this habit is formed for the most part during youth. It will thus be seen that even apart from any consideration of the patient's present comfort and health, the maintenance of the deciduous molars in a condition of normal serviceability is a matter of very great importance.—*Items.*

# TREATMENT OF SULCI IN SIXTH-YEAR MOLARS.

BY R. OTTOLENGUI, NEW YORK.

In order to scientifically fill the occlusal cavities occurring in sixth-year molars, more especially what I have termed initial cavities, it is needful to make a close study of the sulci. Let us begin with the upper molar.

The type of this tooth is one in which we find a depression in the anterior occlusal surface briefly describable as a series of radiating grooves concentrating in a deep pit at the bottom. Posteriorly there is a transverse depression or groove extending from near the buccal surface towards and most often over into a similar groove at the palatal side. ,

Between the anterior and the posterior depressions there is usually a well marked ridge, rarely crossed by a fissure in the first molar, though frequently it is markedly so in the second molar, while in the third the depressions are usually merged into one. Caries commonly attacks this anterior depression at the extreme bottom of the pit where lodging-place for food is found, because the pit is made by approximation of the infolds of the enamel plates. Even where caries has not appeared it is not uncommon to find this pit deep enough and wide enough so that an explorer apparently enters a cavity. In such cases the tooth should be filled, whether carious or not, there being no place where the doctrine of prevention being better than cure is more applicable.

From the pit at the bottom of the depression will be seen radiating lines which may be either actual fissures, or merely depressions. Two of these lines require special attention. Anteriorly will be seen a line or fissure which terminates in a bifurcation forming with the stem of the fissure a Y. All dentists of course cut out that part of this fissure which corresponds to the stem of the Y because it leads directly down into the actual central pit where the caries is. Many stop cutting as they reach the bifurcation, leaving untouched the V part of the Y. But in making the extension not only should the V part of this Y fissure be cut out, but the little hillock of enamel lying between should also be removed. This is not always easy to do. Often the V part of the Y shows as mere radiating depressions and are not truly fissures in character. In such cases it is not always easy to cut them out, especially when dealing with a child.

I may therefore take up the instrumentation of such a cavity. Dealing as I am with the initial cavities, which, as I have said, should never be prepared for a small filling, the start is made with the tiniest of rose burs, one that is sharp, a new one being preferred if you would save pain to the little one. Of course in the presence of a true cavity a larger bur may be used, but to save pain a smaller bur is preferable. The actual caries having been removed partly with the bur, and in case of sensitiveness with hand excavators, the spoon being chosen where it can be used, the next step is to extend the cavity. Here I use the tiny rose bur again wherever there is an actual fissure; reaching the bifurcation of the Y-shaped fissure already described, let us suppose that it ceases to be a true fissure and becomes merely two lines of depression radiating anteriorly. I change my bur for a tiny "gem" stone and grind away the little hillock of enamel lying between the lines forming at this point a smooth sloping depression without lines. Usually, however, it will then be seen that the radiating arms of the V are more nearly true fissures than had been supposed. Now a tiny wheel bur is taken and the two depressions easily trace at the same time forming slight lateral undercuts. The same general mode of preparation is followed with all sulci or radiating lines of depression. Should two such grooves after preparation lie closely together a stiff hatchet will easily chip away the intervening ridge of enamel, converting the two into one. A cavity prepared in this way appears as a well defined central cavity with radiating grooves following the course of the original sulci. Such preparation with tiny burs is almost painless. No effort should be made to greatly widen these grooves for a reason which must now be explained, and which is the essential feature upon which, in my opinion, largely depends the success of the whole operation.

Leaving the initial occlusal cavity for a moment, let us consider one which comes to us so large that after preparation the true edges of the cavity lie far out towards the lateral walls and therefore high up on the cusps. The best that can be done with such a cavity is to prepare it with strong enamel margins and after filling we will have the true cavity margin, in contact with the gold filling, exposed to the stress of mastication, and the depositions of food debris. In other words, the actual edge of the cavity, and the actual edge of the gold, are in contact at the extreme surface of the cavity.

Going back now to the initial cavity which I have prepared, a central cavity at the bottom of the pit with radiating grooves cut out with the smallest of instruments, suppose that we fill such a cavity only up to the true margins of the prepared cavity. We would have as a finished filling a gold inlay with arms extending in all directions like an octopus. Such filling would, like the large one, have all its cavity margins exposed to the stress of mastication and they would be constantly covered by the filth of the mouth.

But my method in filling such cavities is to proceed with my gold, filling the area over and above my octopus-like cavity, so that when completed the initial cavity, prepared with a minimum of cutting away of tooth substance, would to the eye exactly resemble that larger cavity where a large part of the occlusal surface appeared to be gold. But by this procedure, where are our cavity margins? The contact of gold and enamel edge is buried deep under the overlap of gold. This gives two important results. First, the actual weak spot, the true cavity margin, cannot be reached by oral filth, and cannot be fractured, crushed or crumbled by masticatory stress. Secondly, once the tiny grooves are filled flush and the gold is brought over the true enamel margins, further malletting is supported by solid underlying polished enamel, and a very heavy blow, using strips of heavy foil either in sheets or in folds, will bring us the ultimate of contact possible between gold and tooth substances.

As soon as you comprehend this principle, it becomes clear why the grooves are cut out so narrow. For as they are widened, the cavity margins creep up the sloping sides of the cusps and there is less and less overlapping of the gold, so that the true cavity margin is nearer and nearer to the surface, where all the dangers are.

It must not be understood that these fillings when completed produce teeth with flat tops, thus destroying their masticating usefulness. This is true prior to polishing, but the finishing brings us a different result. Small stones are used at first, producing a slight concavity of the gold, care being taken to avoid grinding of the enamel. When only slightly too high for the bite, the surface left by the stone is easily marked by contact with the cusps of the occluding tooth, and then small round finishing burs are used to cut out depressions for the reception of these occluding cusps. The result will be a masticating surface which will be serviceable without having cut away the overlap of gold which protects the true cavity margins. The filling should be finally finished with burnishers which must be used with all the force possible, in order to make the surface even more dense than can be obtained merely by mallet force—*Items.*

## THE COLORING OF CEMENTS.

### WM. W. BELCHER, D. D. S., ROCHESTER, N. Y.

The coloring of cements to more nearly resemble the tooth or teeth of the case in hand is not entirely new. A number of years ago, the manufacture of a then popular cement supplied with each package a minute vial or pigment. There was no attempt to classify the pigments, and one might get the darkest pigment with the very darkest shade of powder known to the trade.

Opening a new box of filling material gave one the thrill that comes to the small boy and his investment of five copper coins in a prize package. However, if one continued purchasing this particular brand of filling material, he became in due time the proud possessor of all the various pigments supplied by the manufacturer. He also found these vials very unhandy, never near-by when wanted, while indifferent results only were obtained with the most persistent efforts.

I am using at the present time a number of highly-colored lead-pencils. To get the required shade, the lead-pencil is passed a few strokes over the ground glass slab; the necessary amount of phosphoric acid is then poured on the slab and thoroughly incorporated with the pigment; the powder is finally added and the three thoroughly mixed.

To obtain good results, it is necessary to have a knowledge of the primary colors and their combinations. One will soon learn that a minute quantity of coloring material is abundant.

An absolutely white oxide of zinc powder is best to start with as a base. This white powder is not as easily obtained as the darker shades. A white powder is the most difficult to manufacture, but if one insist it will be supplied.

The colors of pencils most used are blue, green and red. For shades, the occasional use of the black lead-pencil is necessary.

Cements are apt to be of a darker hue when combined with phosphoric acid than when in the dry state. If one wishes to experiment with a color or shade, he may incorporate the pigments with a small amount of water, adding the powder. He can then decide quite definitely on the quantity of the coloring material needed.

An occasional patient comes with a broken facing on a crown or bridge; it is necessary that it be immediately restored. The projecting platinum pins make a most excellent anchorage for a pellet of cement, properly colored, contoured and polished with cuttlefish disks, thus restoring the missing facing in co-relation with its neighbors until a more opportune time for a permanent operation. I have in my practice cement facings that have been in constant use for over a year, the patient well satisfied, and refusing for the time to have a more permanent operation. The coloring material, so far as I can determine, is as permanent as the filling.

The proper coloring of cements in inlay operations is self-evident. To become an adept in this procedure requires a moderate investment of time and patience, but will well repay the efforts expended by the operator in the more artistic results obtained.—*Office and Laboratory.*

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# CONSTRUCTION OF BRIDGE-WORK, USING TEETH FOR RUBBER WORK.

BY DR. R. D. CRUTCHER, LEWISBURG.

This work is applicable only to the bicuspids and molars, and will not answer to a very short bite; for when the bite is very short, it is almost impossible to make a piece of work with the required strength. We will consider a bridge in a young lady's mouth with second right superior bicuspid, first and second molars absent, the third molar and first bicuspid in position. Each being found in condition warranting a piece of substantial bridge-work, the first step would be to prepare the molar for a shell crown, as I think the work likely more substantial. This bicuspid I would prepare as for a Richmond crown. Then I would proceed to construct my cap for root, with post just the same as for the Richmond. I now proceed to take the bite in the usual way. Next I select the proper colored teeth rubber, using care to get them as near the desired length as possible. Now mount them on your model as you would have them arranged when finished as to contour of arch, leaving a space between each tooth about the thickness of a piece of 30-gauge plate. You are now ready to complete your bicuspid abutment. Grind the mesial and distal walls of the rubber tooth a little concave. using care not to approach too near either buccal or palatal walls. If you impinge upon the buccal wall, you destroy the esthetic effect; if on the palatal, you destroy the effect desired. Take a small piece of tin, No. 60, the same width that the tooth is long, and measure around the tooth for a pattern to cut out the gold by. Spread your tin on gold and cut pattern in gold. Now bring the edges of the gold together, forming a band, and unite with 22-carat solder. Remember, we are using 22-carat plates. The tooth is now ready to adjust to the band. and may be done by driving the band down around the tooth, using a small piece of poplar wood to set the tooth on while driving the band home. Remove the band from the tooth and cut out the face of the band, so that the buccal surface of each tooth will be exposed like the open-faced crown, however leaving no rim of gold at the bucco-occluding angle. This leaves a narrow strip of gold about one-sixteenth of an inch at the cervico-buccal angle. Now trim the tooth down to the supposed thickness of 30-gauge plate, beginning at the mesio-cervical angle, extending around the buccal wall, at the cervical angle, to the disto-cervical angle, cutting it back about one-sixteenth of an inch. The tooth is now ready for the band to be adjusted. Cut the band at labial wall; place the tooth in the band, and burnish the band to the tooth. Remove the surplus gold from the lap; bring the edges together; remove the tooth, and solder; replace the tooth and reburnish the band to the tooth. If you find at this stage too much gold showing, grind it away with the tooth in place.

We are now ready for the cap. Using a small pair of shears, clip from the gingival margin of the band the surplus with the pin side of tooth flush, and smooth the surface with a file or the side of a corundum wheel. Remove the tooth; take a small piece of plate, 22-carat, 30-gauge, and cut to fit, and solder the same to band with 22-carat solder. Trim the edges, and you are now ready to attach to the band and the pin, uniting them with hard wax. Remove the tools. Invert and solder with a 20-carat solder. Slip the tooth back in place, and finish polishing it as you would ordinarily. Now proceed to complete each dummy as you did this piece, save the band and the pin, and when all are ready wax them in place as you would other dummies, adjusting them to the articulator. Proceed to invest after you remove all teeth, and solder as you would any other piece of bridge-work, giving it plenty of body to keep it from springing or bending. Finish the work as you would other work of that character, after the teeth have been cemented to their respective places and allowed to harden.—*Headlight.*

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## INJURY FROM USE OF A CERVICAL CLAMP.

The Libbey cervical clamp is made with one jaw swung on a pivot or hinge which allows the strain to be divided between the tooth and the gum, each taking a portion of it and allowing the jaw on the opposite side of the bow to be carried as far up or down on the cervical edge as may be required.

I have used it in hundreds of cases with no bad effect, until the present experience. I had practically prepared a cavity in an inferior bicuspid and tried the clamp in order to see how it would fit. As soon as I released the pressure of the forceps and allowed the broad expansion of the swinging portion to rest upon the gum, the pain was so intense as to distress the patient, and I immediately removed it.

The rubber dam was placed in position, a pad of spunk, a prepared artificial sponge was inserted under this expansion of the clamp and no further pain was experienced from the clamp, which remained in position for about an hour, while a large gold filling was being inserted in the cavity.

The operation was completed and the patient dismissed.

About five days subsequently the patient returned for further professional services. She stated that she had suffered considerable pain since her last visit and informed me that a kind of skin had first loosened and then come away from the gum below the tooth. I supposed it must have been a little sloughing, such as comes from wounding the margins in dressing fillings which extend below the margins of the gum tissue, but when I examined it by mirror light I saw that the alveolar process was exposed internally to the exact shape and dimension of the expansion of the clamp which had rested against the gum. This was exceedingly tender and worried the patient considerably.

Under proper treatment, granulations formed and again covered the denuded bone and the pain and soreness gradually disappeared.

The gum tissue over the bone was so thin that the bone and gum edges seemed to be continuous, no distinct raised edges being visible. The question now arises as to what was the cause of this sloughing of the gum tissue.

I have explained it by the strangulation of the gum tissue from pressure. The flesh was very thin over the bone and the metal of the clamp was almost a fac-simile of the exposed bone at this point, pressing upon it exactly at all points of the circumference and the single contact acting much as a waffle or biscuit-cutter, and strangulating this gum, which subsequently sloughed, became detached and exposed the alveolar process.—*Extract Pacific Dental Gazette.*

# SUGGESTIONS

## CAUSE OF FAILURE OF DENTAL OPERATIONS.

**F. L. Platt.**

Many thousands of dental operations fail because they are not indicated in the places where they are employed. There seems to be a lack of discrimination on the part of many operators and an inability to select for each individual case the methods and the materials best suited to its conditions. Operators are either ignorant of the individual qualities of their materials and the conditions indicating their use, or else are guided (as they may also be in the purchase of their materials) by the financial consideration involved in each transaction. Thus many gold fillings are placed in cavities where amalgam would give better results, and bridges without number are placed on piers unable to bear them.—*Dental Gazette.*

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## TAKING THE BITE.

**W. H. Taggart, Chicago.**

I never had good success in taking the bite in an edentulous mouth until I began to use ideal base-plate wax, making an accurate fit to an accurate model, building the wax up, and getting articulation, as Dr. Goslee had suggested, with the supplementary suggestion of sprinkling the upper and lower parts of the ideal base-plate with gum tragacanth. In an edentulous mouth, with the tendency for the plate to slip around, you see how much easier it would be to close the jaws always in the same direction, if those plates were immovable, the same as a good fitting plate would be in the mouth, and thus gum tragacanth sprinkled on the part in contact with the mucous membrane will make the bite twice as firm and more easily handled by the patient.—*Review.*

## RESTORING FACING TO A FIXED BRIDGE.

**R. Ottolengui, New York.**

Notwithstanding the fact that there are numerous methods of using removable porcelain facings in bridge-work—that is to say, facings which are not attached with solder—it still frequently occurs that the teeth are soldered to the fixtures; indeed in some instances, in spite of the risk, it may seem to promise better results. In a bridge thus constructed this winter a facing was subsequently broken off and its replacement may be of interest to others who may find themselves in similar predicaments.

The bridge was made to extend from the cuspid to the second molar, but as the latter tooth had moved forward since the loss of the natural teeth, there was room only for a very narrow tooth backing of the two bicuspids, which were necessarily used for the sake of appearance and occlusion. As both the abutments were living teeth, the bridge was made to extend into cavities at each end, the spurs being secured by gold fillings. The bridge, however, had additional support on the second bicuspid root which was still in position and in good health. Cuspid facings were used and the occlusal ends thoroughly protected by having the gold extend over. Nevertheless, within six months, the patient returned with the narrow facing broken off; this was the one nearest to the molar. At first the difficulty seemed almost unsurmountable—that is, what might be called the backing was really an almost fully contoured solid gold bicuspid having been extended for the sake of the occlusion. A study of the case made it apparent that to drill two holes for the reception of Bryant repair nuts was impracticable, partly because they would necessarily be so close together that one would impinge upon the other; also because the structure would be too much weakened. This problem was finally solved in the following very simple manner: A single hole was drilled and reamed out for the reception of one Bryant nut; the posterior pin of the facing was cut off to about half its length and a small hole drilled for its reception, this hole being only deep enough to receive the pin and not passing through the backing. The facing was then cemented to place in the usual way and the Bryant nut firmly set, the whole being perfectly secure as the second pin served as a security against rotation of the facing.—*Items.*

## POLISHING STAINS FROM LINGUAL SURFACES OF LOWER INCISORS.

Frequently it will be found difficult to reach these surfaces with the ordinary rotary brushes. Substitute for these a moose-hide wheel about one-half inch in diameter, and run it as nearly as possible parallel with the long axis of the tooth. In this way the most inaccessible surfaces may usually be reached. The wheel, however, is not so effective for accessible surfaces as the brush.—*Review.*

## HOW TO MAKE ROOT FILLINGS ANTISEPTIC.

**E. A. Royce, Chicago.**

Pink gutta-percha is very extensively used as a root filling, perhaps more so in this immediate section than elsewhere. It has many very desirable qualities, but it generally takes but a short time for it to become offensive. The usual form of gutta-percha root filling lacks something which is essential if we would obtain the best results from its use. To remedy this, I began some years ago to add hydronaphthol to the chloro-percha, gaining in that way the benefit of a powerful antiseptic, and while this was a great improvement it did not entirely satisfy me, as a large part of the root filling is made up of ordinary cones. To overcome this I began to make my own cones of gutta-percha, into which I incorporated five per cent of hydronaphthol, which gave a very decided hydronaphthol odor to the mass of gutta-percha. These cones I use in conjunction with the antiseptic chloro-percha, thus making a filling which not only remains aseptic after being introduced into the root canals, but will exert a very powerful antiseptic influence upon the surrounding dentin.

My tests have been made in the mouth instead of the laboratory, and while this is a slow method you have positive results, as the test fillings are subjected to the same conditions which other fillings will meet in the mouth.—*Review.*

## PROTECTING CEMENT FILLINGS FROM MOISTURE.

Mistakes are frequently made by conscientious operators in keeping cement fillings dry too long after insertion. With many of the best oxyphosphates in use to-day the only effective means of preventing shrinkage of the filling is to allow it to become moist shortly after insertion. Manufacturers should test their cements and indicate on the packages the proper length of time after mixing to allow moisture to come in contact with the filling.—*Review.*

## TAKING OF THE BITE.

**Dr. Davis.**

In regard to taking the bite, I believe it can be done properly with wax base-plates, instead of ideal base-plate material or wax which is wired. Make upon the model a base-plate of pink paraffin wax, and upon this, following the ridge, a rope of wax for the bite. Place in the mouth and trim the wax to the length desired for the teeth and the fullness of the lips. If the bite is one for a full upper and lower case, the jaws should be closed easily to ascertain if the occluding surfaces of the bite plates strike uniformly. If such is found to be the case they should be removed from the mouth and placed in ice water, so that the wax shall become hard, preventing them from sticking together when securing the relation of the lower jaw to the upper. The method I have found of much service is to have the patient thrust the lower jaw forward and then walk away from him. The muscles will become tired, being in this strained position, and the jaw will slide back unconsciously into a position of rest. Returning to the patient, the wax plates may then be sealed together. Instead of pulling them out of the mouth with the fingers, which might change their shape, instruct the patient to push them out with the tongue; he can easily do it, and the operator may grasp them as they fall out of the mouth without danger of changing their shape. —*Review.*

## TREATMENT OF CONGESTED GUMS.

In the treatment of congested gums, whether involved in pyorrhea alveolaris or not, iodide of zinc in the crystal form has often been recommended and applied with much success. It is one of the most effective agents to restore the gums to their normal form, but it occasionally seems to induce sensitiveness of the teeth, and the taste is objectionable to some patients. To overcome these limitations the crystals may be mixed with one of the essential oils to the consistency of a syrup. Applied in this form, it is fully as effective and much more acceptable.—*Review.*

## PREPARING A CAVITY FOR PORCELAIN INLAYS.

**N. S. Jenkins, Dresden, Ger.**

It is indispensable that the cavity should be shaped so that the matrix can be perfectly made and withdrawn without changing the shape in ever so slight a degree. To this we need not hesitate to sacrifice frail walls, especially upon occlusal surfaces, as the crowns of molars and bicuspids and the palatal walls of upper incisors. In all approximal cavities space must be gained by wedging or filing. At all occlusal surfaces the walls of the cavity must be at right angles, and thin edges should be avoided as far as possible. All the walls of the cavity should be as nearly at right angles as circumstances permit. Occasionally some decayed dentin can be allowed to remain until the completed filling is ready to be set, if its premature removal would necessitate undercuts, but usually every particle of decay can be removed with advantage in the first preparation of the cavity. All the edges should be clearly defined and well polished, that it may be possible to burnish the edges without injury to the matrix. It is well to polish also the interior of the cavity, as a smooth surface facilitates the removal of the matrix.—*International.*

## TO REMOVE STAIN FROM NECKS OF TEETH.

**W. C. Smith, E. St. Louis.**

In cases where the gingival third of the teeth is coated with dark green stain, apply equal parts of tincture of aconite, tincture of iodine and chloroform. Then use a brush with pumice and if necessary repeat the application.—*Review.*

## CLEANSING OF THE HANDS.

**R. A. McDonnell, N. Haven, Ct.**

I have no doubt that every dentist washes his hands after treating each patient. Such frequent washing, unless the greatest care is used in selecting a pure soap, will almost inevitably result in roughness of the skin, especially in winter, and in many cases, in actual eczema. I had great trouble myself from this source until I have finally hit upon a soap which I can thoroughly recommend. It is called Quinorcin soap, and is said to contain quinine and resorcin, making it antiseptic. At any rate it is very cleansing and unirritating.—*Extract Cosmos.*

# OBITUARY

## DR. F. W. BLOMILEY.

Dr. F. W. Blomiley was born in La Grange, Wisconsin, August 3, 1849. He began the practice of dentistry in Elk Horn, Wisconsin, in the year 1878, and graduated from the Indiana Dental College in March, 1882, when he returned to Elk Horn and continued in practice there until January, 1885, when he moved to Sioux Falls, South Dakota, where he pursued the practice of his profession until the time of his death, January 27, 1903.

Dr. Blomiley was one of the pioneer dentists of the State and one of the first members of the South Dakota State Dental Society.

He was a constant sufferer for thirty years from chronic dyspepsia, but his untiring energy kept him at his post until the day before his death.

The South Dakota State Dental Society at it last meeting in Redfield, voted that the Secretary be authorized to insert his obituary in some of the leading dental magazines in circulation in the west.

# AFTERMATH

## PERSONAL AND MISCELLANY.

Died:—Dr. Carl A. Booren, New Orleans, La., died July 30.

Died:—Dr. W. C. Wickins, aged 64 years, a prominent dentist of Minneapolis, died August 3.

Married:—Dr. A. Q. Warren, Lowell, Mass., was married August 5, to Miss Harriet S. Doyle, of Nashua, N. H.

Good Location for a Dentist:—Silver Lake, Minn., papers announce that there is a fine opening for a good dentist.

Dr. G. W. Wertz Dead:—Dr. G. W. Wertz, Omaha, Neb., died after a short illness at his home in Omaha, Neb., August 10.

Dental Student Fined:—Louis Solomon, a dental student in Philadelphia, was fined $50 for practicing dentistry without a license.

Dentist Bankrupt:—Dr. A. J. Ferner, Chicago, filed a petition in voluntary bankruptcy August 5. Liabilities, $2,238. Assets, $305.

Dental Thieves:—Thieves entered the dental office of Dr. D. A. Collison, Marshalltown, Ia., and stole $50 worth of gold and other materials.

Dentist Commits Suicide:—Dr. J. W. Stroh, a young dentist of Mansfield, Ohio, committed suicide August 8, by shooting himself in the mouth.

Dentist Loops the Loop:—Dr. Harglardine, Salt Lake City, Utah, looped the loop on a bicycle and escaped without serious injury August 7.

Goes to Germany:—Dr. G. A. Kennedy, Kent, Ohio, has accepted a position with Dr. Geo. Martin, Berlin, Ger., and leaves for Germany October 10.

Dr. D. M. Cattell Leaves Chicago:—Dr. D. M. Cattell has moved to Nashville, Tenn., to accept a position on the Faculty of Vanderbilt University Dental College.

THEIR "PULL" DON'T COUNT:—The dentists of New Jersey have asked to be excused from jury duty. Can't they get off by exercising their pull?—*Chicago Tribune.*

DR. J. B. PATRICK DEAD:—Dr. J. B. Patrick, one of the oldest and best known dentists in the entire south, died at his home in Charleston, S. C., July 21. Age, 81 years.

MORE BURGLARIES:—The office of Dr. J. S. Stone, Clarksburg, W. Va., was entered by burglars August 11, and gold, silver and other materials to the amount of $100 taken.

MISS BROPHY APPOINTED:—Miss Brophy, niece of Dr. T. W. Brophy, Chicago, has been appointed superintendent of the Sherman Hospital to succeed Miss Cust, former superintendent.

KILLED BY ELECTRIC SHOCK:—Dr. F. L. Morhard, New York, was killed at his residence July 23, by accidentally coming in contact with an electric light wire, in his cellar, that was not properly insulated.

THE LIGHTEST METAL:—The lightest of metals is lithium, specific gravity 0.59. It is the only known element with which nitrogen will directly combine at ordinary temperature.—*Power and Transmission.*

SOLDIERS HAVE BAD TEETH:—According to a German paper, out of 3,000 soliders recently mustered into rank and file in Breslau, Silesia, only 184 had good teeth. The number of bad teeth of the other soldiers was no less than 26,394.

INTERNATIONAL DENTAL CONGRESS APPOINTMENT:—Dr. C. E. Bentley, Chicago, has been appointed Chairman of the Committee on Clinics for the International Dental Congress to be held in St. Louis next year. A more fitting appointment could not have been made.

SULTAN'S JEWELLED TEETH:—Owing to an accident on horseback, the Sultan of Johore had all his incisors knocked out. They have been replaced by teeth of gold, into each of which has been set a large diamond. The effect is very wierd when the Sultan smiles and the sunlight catches the stones.

CHANGE IN IOWA DENTAL LAWS SUGGESTED:—The State Board of Dental Examiners of Iowa have, in their report to the Governor, recommended that section 4 of the law be amended to permit reputable licensed practitioners of dentistry from other States to appear for examination, as well as those having diplomas.

HOW TO GET EXCUSED FROM JURY DUTY:—New Jersey dentists have asked to be excused from jury duty, and a prominent newspaper suggests that if they could only dull the teeth, or better, extract them of the mosquitoes of that State, they would be not only excused from the duty named, but given rewards without limit for duty well performed.

TURKEY ADMITS AMERICAN DENTISTS:—American physicians and dentists will now be on the same standing in Turkey as are those of France. They have heretofore been refused examination and could not practice. They will now be allowed to practice if they present good diplomas and pass the examination. This is the result of pressure brought to bear on the Sultan by President Roosevelt and U. S. Minister Leishman.—*Brief.*

BROKEN TOOTH FOUND IN PAROTID GLAND:—An operation was performed on ex-Alderman John Sheehan, of New Britain, at St. Francis's Hospital, Hartford, Conn., for the removal of the parotid gland. The operation, which is an unusual one, was successful. A piece of broken tooth was found in the removed gland, and this is supposed to have been the cause of the trouble with which Mr. Sheehan has suffered for some time.

DIED IN A DENTAL CHAIR:—While sitting in a dentist's chair and having teeth extracted, Mrs. Nora Blue of Juniata, Neb., died in Topeka, Kan., from the effects of chloroform. Before the drug was administered to alleviate the pain, Mrs. Blue was examined and pronounced able to take the necessary quantity. After fourteen teeth had been taken out, she revived, sat up in the chair, spoke to the dentist, and then sank back and died.

DON'TS FOR CHILDREN:—Don't attempt to work for the child until you have gained its confidence.

Don't deceive a child by promising you will not hurt it. "You know better."

Don't be afraid to let the child see the instruments you are using.

Don't worry the child by prolonging the operation.

Don't extract unless absolutely necessary.

Don't be deterred from using your judgment as to which is the proper course in each case, by anything the parent or guardian may advise.—*Josephine Mills in Dominion.*

A TOOTH ONE OF THE POPE'S RELICS:—Among other things, Pope Leo XIII. was a great collector of relics of the saints, and he left a great number of such relics, but some of them came to him only after considerable difficulty. One of the last things he added to his collection, indeed if not the very last, was a tooth from the genuine skeleton of Saint Maryial. The entire skeleton was in the possession of the Limoges cathedral. Pope Leo expressed a desire to have a portion of this skeleton, but the canns declined to part with even the smallest part of it. The pope's desire then took the form of a command, but he was not obeyed. Finally the Bishop of Limoges suggested that one of the saint's teeth be sent to his holiness. This was satisfactory to his holiness, and one of the most famous dental surgeons in Paris was sent to extract the tooth. It was taken to the holy father by a special committee of the canons.

THE PROPER USE OF REST, HOLIDAYS AND AMUSEMENTS:—It is in these particulars that so many men seem to fail. They go on working from one year to another with little or no break, and sooner or later comes the inevitable breakdown with which Nature takes her revenge for the neglect of her laws. Instead of requiring less holiday than the average man, the dentist requires more, because of the confining nature of his work. Personally, I think a month is the least any man in full practice ought to have to keep himself in good condition; say a fortnight in the spring and a fortnight in the autumn, which is on the whole a better arrangement than taking four weeks on end: but in addition to this he ought to allow himself the universal weekly half-holiday, which is the heritage of every working man in this country. I take it for granted, of course, that Sunday is a day upon which no work is done. I am aware that some men do work on that day; but it is one of the greatest mistakes that can be made to do so, and I speak not upon religious grounds, but from a common-sense, practical point of view.—*J. M. Nichol.*

DENTAL WORK AS A CRIME CURE:—Superintendent MacQueary, Chicago, would reform the youth through the influence of the dentist. These are some of his suggestions on the various methods of treating with juvenile criminals:

Imprisonment—Lacks the corrective influence, and is too acceptable to the ordinary criminal.
Hanging—Too painless.
Electrocution—Also too painless.
Whipping—Good in its way, but not lasting in its effect.
Ducking—Fine for women, but enjoyed by boys.
Water Cure—Too easy.
Dental Cure—Fine. Lasts longest of any. Hurts more than hanging, and has all the earmarks of the old tortures that were most effective.

"A few treatments in the dentist's chair would have a most salutary effect upon youthful criminals," said Superintendent MacQueary. "It would be corrective as well as a punishment. We might save many young criminals by fixing their teeth."

The following schedule of punishments has been suggested:

Petty Larceny—Two to five teeth pulled.
Larceny—Two fillings to half dozen gold crowns.
Assault and Battery—Extract one to five nerves.
Manslaughter—One week of crown work.
Murder—Graft three new teeth.
Disorderly Conduct—Teeth cleaned and one amalgam filling.

NATIONAL ASSOCIATION OF EXAMINERS' MEETING:—The meeting of the National Association of Dental Examiners was held at Asheville, North Carolina, July 24, 25 and 27, 1903. Among the important subjects of discussion were the questions of the interchangeability of licenses between States and the formulating by the Association of the list of reputable colleges aside from any action of any other body. The discussion on the interchangeability of licenses resulted in the adoption of a resolution that the Association favored such action. There was much discussion on the question of the Association making its own college list, which resulted eventually in a motion offered by Dr. Barrett, of Massachusetts, to the effect that the Committee on Colleges should be asked to revise the list of recommended colleges of the Association and obtain from the various State boards a statement showing the number examined, passed and rejected in the college and that when it appears that fifty per cent. of the graduate students from any college fail to pass in States where examination is necessary for registration, the Committee on Colleges should report such facts to the Association for such action as might seem fit and proper. According to a ruling of the Chair there will be no recognized list of colleges next year. The election of officers resulted as follows: President, Burton L. Thorpe, Mo.; vice-president from the west, James G. Reid, Chicago, Illinois; vice-president from the east, J. Barker Tenny, Wallingford, Conn.; vice-president from the south, T. A. Whitby, Alabama; secretary and treasurer, Charles A. Meeker, Newark, N. J.

# DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

## PORCELAIN—ITS FUSION, SHRINKAGE, STRENGTH AND POSSIBILITIES.

BY D. O. M. LE CRON, D. D. S., ST. LOUIS, MO.

Professor of Crown and Bridge-work and Porcelain Art, Barnes Dental College, St. Louis, Mo.

It is not my purpose to take up your time in rehearsing the pros and cons of how to construct crowns, bridges or inlays, as I would be obliged to repeat what many have told and others repeated.

No branch of dentistry has made the progress of late years as that of porcelain. You have but a few years to look back and one could count on his fingers' ends its advocates. So many denounced it as impracticable, and were slow to take it up. Time, though, has demonstrated that its possibilities in dentistry are almost unlimited. I wish to emphasize to the beginner, and to those contemplating entering the new field, that he must expect his failures and must pass through an experimental stage. He cannot learn the correct fusion of the porcelain in one day, or master the colors to produce an artistic piece of work. Your success depends upon good judgment, mechanical ability, artistic skill, and cleanliness. It is well, in any walks of life, to look backward and around, that we may take a broad and comprehensive view of the field we occupy. Too many of the profession look on the commercial side and only aim at the mighty dollar, and care little for the artistic or mechanical standpoint. Those who wish to make a success of porcelain work must work out some of the mysteries of the art; they cannot learn it from text books. You will find that perfect fusion is very necessary—as I will show you later. You must calculate the shrinkage, and make your separation accordingly, learn to manipulate and carve. Study the effect of one color mixed or added with another. A knowledge of electricity to handle your furnace is necessary. We, who have passed our experimental stage, can aid you in shortening your road, but your success depends wholly on your ability, artistic skill and perseverance.

The profession has such varying opinions of the merits of the different bodies placed on the market that it is hard for the beginner to conclude what to use. Some advocate high fusion and others low. Many of the advocates jump at conclusions from hearsay, or the advertisement of some manufacturer, and never try other bodies or experiment whatever. Many such, if gifted with the ability of composition and pushing the quill, get into print at once to let the profession in general (and their patients) know that they are doing porcelain work. For my own satisfaction and more accurate data, I have devoted much time experimenting, learning the true fusion, exact shrinkage, the utmost possible strength, and blending the colors of the various porcelain bodies on the market. I assure you that my motive was to get a true and impartial comparison of their relative worth.

## FUSION OF PORCELAIN.

We will first take the fusion of porcelain. It is of the utmost value to learn the true baking or fusion point; if underbaked, it will be brittle and flake off and not withstand a pressure by several hundred pounds. In overbaking you produce porosity and extreme weakness. and your work is a total failure. The question is asked, how to arrive at true fusion? Some say, "the eye can detect it;" others, "pure gold and a certain time after it melts," while a few "a given time for the furnace to run.' To the first I will answer, that it is impossible to detect the true fusion with the eye. When you reach the orange color of heat 2000° an eagle's eye will not determine it correctly. As for the second method, with the melting point as a guide, you know you have 2016°, but above that you are obliged to approximate your heat and your electric current will vary. The third method is likewise susceptible to variations of your current. I have not found an electric current in which variations did not occur. I experimented with a thermometer placed in a fire-clay bulb with a heavy platinum wire extending into furnace, but fluctuations in the temperature of the room varied so that I was compelled to abandon it. I have used the mouth-mirror to reflect the light; also used Custer's Arc Light. I found both were good until they reached about 2000° Farenheit. Your furnace then assumes the orange color at that heat, and the higher you go it becomes brighter, gradually reaching a white heat, so that it is impossible to detect a true fusion. I used pure gold to detect a certain degree of heat, and then timed my furnace accordingly with quite good results, judging the time required for the true fusion on the color of the furnace.

Three years ago I had occasion to get some fire-clay to make small crucibles and retorts for some of my experiments. Upon inquiry I learned they used Seger cones set in series as guards to ascertain the heat of their kilns. I concluded that Seger cones would be a great aid in securing the correct fusion with the furnace, and I procured a number ranging in heat fusion from 1000° to 2800°. After many trials and experiments (baking a certain body and crushing the same until I got the greatest possible strength), making a note of the number of Seger cones and crushing strength. I am now positive of the true and proper fusion of the various bodies on the market.

August, 1902, I concluded to ascertain the fusion points with Le Chatelier's Thermo-Electric Pyrometre, using the Seger cones as guards. The principle upon which this Pyrometer is constructed is the measurement of a current of electricity produced by heating a couple composed of two wires, one of platimum and the other platimum with 10% rhodium—the current produced being measured by a galvanometer.

In preparing the test pieces, I bored a tubing 310-1000 of an inch in diameter and turned a plunger for same, making it 180-1000 of an inch shorter than the tubing.

The body was mixed with water to a stiff creamy consistency and packed in the tube with pressure, and the excess of moisture absorbed with blotting-paper. By this method I was assured of thorough packing and uniform size of all pieces 310-1000 of an inch in diameter and 180-1000 of an inch thick —each button was allowed to dry thoroughly before putting in furnace. The Hammond Electric Dental Furnace was used in making the tests and all under the same condition.

I herewith give you the results as follows:

| | Fahrenheit. | | Fahrenheit. |
|---|---|---|---|
| Allen's | 2340° | Consolidated Inlay | 2138° |
| Close's | 2288° | Whiteley | 2138° |
| White's Inlay | 2254° | Brewster Enamel | 2084° |
| Brewster's Foundation | 2218° | Ash High Fusing | 2012° |
| Consolidated Con. Gum | 2200° | Jenkins | 1580° |

I will leave the profession to judge the correctness of these temperatures, but I am satisfied in my own mind they are absolutely correct, for the most minute attention was given to every little detail.

Experiments will show that correct fusing of porcelian, if you wish to reach the highest point of strength, is absolutely necessary; and I may add that much of your success in this line of work depends on your knowledge of the same.

### TEMPERATURE JUDGED BY COLOR.

In closing this part of the subject, I wish to say temperatures can be judged by color; a body can be approximately judged by the experienced eye. The following table constructed by Kent, giving the colors and their corresponding temperatures:

| | | | |
|---|---|---|---|
| Red in the dark | 752° | Dull Orange heat | 2021° |
| Red in twilight | 884° | Bright Orange heat | 2192° |
| Red visible by day | 1077° | White heat | 2372° |
| Dull red heat | 1472° | Bright White heat | 2552° |
| Dull Cherry Red | 1472° | Dazzling White heat | 2732° |
| Cherry Red heat | 1652° | Dazzling White Purple | 2920° |
| Bright Cherry Red | 1832° | | |

These results obtained, however, are rather unsatisfactory, as much depends on the susceptibility of the eye of the observer to light; also the degree of illumination under which the observation is made. You will note by experimenting in daylight, twilight, and darkness, the colors vary several hundred degrees. By constantly noting these colors in your furnace, in time you can at least approximately detect your temperatures and may at times save you trouble, when by accident you neglect your furnace.

The same table can be used for the gas or gasoline furnace with the same results; but I should advise the use of electricity when it can be procured on account of noise and cleanliness, and certainly a more even degree of temperature can be maintained.

### CRUSHING STRENGTH.

To satisfy myself and settle in my mind at least the great diversity of opinion concerning the relative strength of the porcelain on the market, I have made impartial and quite exhaustive tests of porcelains as to their relative strength. Each manufacturer makes special claims of the porcelain he places on the market, and it is no easy matter for the beginner to select. Many that are considered experienced are led to think as the manufacturer tells them. It is of the most vital importance to have the greatest amount of strength that porcelain can produce to reach the limit of success in crown, bridgework or continuous-gum work, and likewise in all contours of inlay work. In making these tests, I used all precaution in manipulation and I assure you I give the result which I obtained in all fairness, and have satisfied myself beyond a doubt, concerning their relative strength and worth. I prepared a mould by boring a tube 428-1000 of an inch in diameter and turned a plunger 263-1000 of an inch shorter than tube for same. Making a button after baking about the size of a medium size molar. I used the same method of manipulating the different bodies as stated before, using the Seger cones to ascertain the fusion. I will give you only the greatest strength we obtained in the following table. To be positive and not to be misled I baked from four to six buttons of each and labeled same. I also under-baked and over-baked, as I will show you later on, to emphasize the importance of true fusion. These tests were made by the St. Louis Testing Company at Washington University Testing Laboratory on a "Reihl" testing machine.

The porcelain buttons tested for crushing strength and the results obtained are stated in the following table:

| Name of Porcelain. | Break. Load. pounds. | Crush. St'ngth. Lbs. per sq. in. |
|---|---|---|
| Allen Body | 3450 | 26950 |
| Close Body | 5650 | 45640 |
| White's Inlay Body | 3800 | 32205 |
| Brewster's Foundation | 2540 | 20320 |
| Consolidated Continuous Gum | 3860 | 30390 |
| Whitely's Body | 2110 | 16000 |
| Brewster's Enamel | 2690 | 22990 |
| Ash's High Fusing | 2760 | 22810 |
| Jenkins' Body | 3330 | 28305 |
| Consolidated Inlay | 2100 | 15080 |

All of the buttons which crushed at a greater breaking load than 2700 pounds chipped more or less when a load approximately 2000 pounds was reached. It was noticeable that the buttons which required a larger load for their crushing point to be reached, broke into finer powder than those requiring the lighter loads. As the different buttons varied considerable on account of shrinkage, the last column on the table headed crushing strength in pounds per square inch, gives the truer comparison between the strength of the various buttons. In the above table the figures given are the best results I obtained with each of the named bodies, and I attribute the high crushing strength to the fusion of the body.

I found by repeating my experiments that the Close and White's Inlay Bodies were more uniform in crushing when fused at their normal fusion than any of the other bodies—they only varied some 90 pounds. The same Close and White's Inlay Bodies, when under-baked (36° Fahrenheit), giving way from 300 to 500 pounds less weight, while over-fusing (72° Fahrenheit) giving way at 1600 to 2300 pounds less than the proper fusive point. The Jenkins' Body standing its highest test at 1580° (3330 pounds), at the temperature of 1544° (2910 pounds), and crushed at (1090 pounds) 2616° Fahrenheit. It is evident in my mind that many failures in porcelain work can be attributed to improper baking, and particularly to overbaking. If your framework is properly constructed on mechanical principles, and you get the correct fusion, I assure you that porcelain has the strength to stand more than ordinary mastication.

### SHRINKAGE.

I will next take up shrinkage in porcelain, which I assure you plays quite an important part in the manipulation of the body. In applying your body, it matters not, if it be for a continuous-gum piece bridge, crown, or inlay, you must make your calculation for a certain per cent. of shrinkage according to the body used, and I will submit a table of the per cent. shrinkage of the different bodies on the market, to aid at least the beginner.

In extensive pieces of work, I make separation complete at various points, and particularly between the facings or teeth that my work is not warped or twisted out of line.

In inlays, it is necessary to divide your porcelain or carve it in such a manner that it will not shrink from your matrix or warp the same. Shrinkage must be taken into consideration, and allowances made to retain your matrix or framework in the same relative position you get it from the cavity or abutments.

There are three stages of shrinkage in all porcelain: First, the evaporation of moisture; second, the small particles of porcelain closing in as fusion commences; third, as it becomes vitrified. It always shrinks toward its greatest bulk, and the *danger* of contraction must be overcome by separation, making a cross or hole in center of body, according to pieces of work in hand.

The same method in making the buttons was used as before mentioned. All the details in manipulating the porcelain was scrupulously carried out to exactness. The measurements were taken with a Micrometer Calipers measuring 1-1000 of an inch, and calculations made accordingly. To be positive as to the correctness, I baked three buttons of each body, and took their measurement, and found a variation of one-half of one per cent. only in the best bodies. The appending table will show the per cent. of shrinkage as follows:

| Names of Porcelain Bodies. | Per Ct. Shrink. |
|---|---|
| Consolidated Continuous Gum Body | 21½ |
| Close's Body | 21¾ |
| Allen's Body | 22½ |
| White's Inlay Body | 23½ |
| Brewster's Foundation Body | 23¾ |
| Consolidated Inlay Body | 31 |
| Whitely's Body | 31 |
| Brewster's Enamel Body | 33 |
| Ash's High Fusing Body | 34¾ |
| Jenkins' Body | 38¼ |

The above table presents quite a variation in shrinkage. In all of the high fusing bodies, I found the per cent. much less than the low fusing, and the bodies fusing from 2200° up varied only 2¼ per cent., while those under 2200° from 31 to 38¼ per cent. It is evident that the bodies having the shrinkage of 33 or more per cent. must be worked with the utmost care. Then tendency also to globulate in shrinkage, necessitates careful additions to previous bakings.

Porcelain should possess the greatest possible strength and smallest amount of shrinkage to meet all requirements. It must posses the quality of retaining fine carved outlines under great heat. The fusing point should be sufficiently high so the attachment to high grade porcelain teeth becomes permanently secured. Experience has demonstrated to me fully that only high fusing bodies are suited for continuous gum, crown and bridge-work, and I assure you it possesses all the requirements for inlay work on account of less shrinkage, retaining its outline as carved, and color after it is fired.

I will say in passing, that, from clinical experience, I prefer Close's body for continuous gum and foundations for large pieces of work and the S. S. White's body for all general work, on account of their great strength, less per cent. of shrinkage, perfect density, retaining their color, and that they maintain the sharp outlines as carved. All of which is very essential in porcelain work, for absolute exactness in every detail must be carried out, to be successful. The least failure in any part of the process will end with an imperfect piece of work.

## COLOR AND GUM ENAMELS.

I will make a few remarks on color and gum enamels in concluding this paper. Charles Martel says: "The source of color is light, which is either a natural or artificial. Natural light derived from the sun, is termed white or solar light. Artificial light is obtained from burning bodies, and is generally colored."

Colors are distinguished by artists as pure, broken, reduced, and gray or dull. The pure colors comprehend those which are called *primary*—red, yellow and blue, and those which result from their compounds; *secondaries*—orange, violet, green and their hues—such as violet-red, red-orange, yellow-green, etc.

Black can be produced by mixing the three primary colors in certain proportions, and it becomes evident that whenever we mix these three colors in such proportions that two of them predominate, black will result, arising from the mixture of the whole of that color which is in small quantity, with suitable proportions of the two predominant colors.

Thus, if a small proportion of blue is added to red, and yellow, a little black is produced which goes to reduce or break the orange.

The three primary colors, red, yellow and blue, are the source of all other colors derived by mixture.

If you mix blue with yellow, green is produced; blue with red yields a violet; red mixed with yellow you get an orange. A gray can be produced by equal proportions of red, yellow and blue. With black and white you can produce any shade of gray—according to proportions mixed.

Colors gain in brilliancy and purity by the proximity of gray, and it will be observed that all teeth as a rule have more or less gray in the central third of tooth.

Proper shading of porcelain requires artistic skill and a good eye for colors.

To procure these colors requires much experience. It is not to be learned by reading. Any one wishing to become proficient must get it by constant experience. Unlimited shades can be produced by changing the proportions of color, and the proper blending produces natural effects. The inexperienced cannot expect to produce good results with his first attempt. He must study the effect one color has on another in manipulating the porcelain bodies. Closely observe the tooth structure, and learn to detect the underlying colors. As you are able to see these colors and manipulate the porcelain body, you will be accordingly successful with your work. It is difficult to lay down a rule to master this shade problem and I will not attempt it; but can heartily endorse the process as recommended by Dr. Reeves of Chicago. I do not believe it can be taught except by experiment, as I consider it the most difficult problem in porcelain work. I am safe in saying that gum enamels, as put on the market, are as a rule very unsatisfactory to produce the natural gum.

Experience has taught me to combine the Close and Whitely bodies in certain proportions, and with the aid of White's Inlay body added in small quantities, you can get the desired effect, and I assure you can reproduce any natural gum with which you come in contact.

* * *

# ARSENOUS ACID—A PHARMACO-THERAPEUTIC STUDY.

BY HERMANN PRINZ, M. D., D. D. S., ST. LOUIS, MO.

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*Arsenous Acid*: Acidum arsenosum. $As_2O_3$.

*Ethymology*: From the Greek:—Arsenikon, which, however, designated what is known at present as Orpiment or King's yellow—native arsenic trisulphid.[1]

*Synonyms*: Arsenic trioxid, arsenous anhydrite, arsenicum album. Acide arsenieux (French), Arsenige Saure (German), Arsenico blanco (Spanish).

*Source and Character*: Arsenous trioxid is not a true acid (absence of hydrogen). It is obtained by roasting arsenical ores. In Bohemia and Saxony it is largely produced from smelting crude cobalt ores, and in England from arsenopyrite, known as *mispickel* or arsenical iron. It appears in transparent porcelain-like masses which slowly change to an opaque, milk-white color, or in the form of a fine, white powder. It has no taste or odor and is entirely volatilized by heat.[2] When thrown on ignited charcoal it emits a garlic-like (alliaceous) odor. It is slowly soluble in from 30 to 80 parts of cold water, depending upon the variety employed. It is completely soluble in 15 parts of boiling water and in 5 parts of glycerin; it is sparingly soluble in alcohol. It is incompatible with the salts of iron and magnesium, with lime water and astringent vegetable drugs. The dose is 1-60 to 1-12 grain in pill form or solution after meals.

*Preparations*: Liquor acidi arsenosi (U. S. P.), Liquor arsenici hydrochoricus (Br. P.), a one per cent. solution of arsenous acid acidulated with hydrochloric acid.

Liquor potassii arsenitis (U. S. P.); Liquor arsenicalis (Br. P.), Fowler's solution, a one per cent. solution of arsenous acid neutralized with bicarbonate of potash and colored and flavored with compound tincture of lavender. Dose: 3 to 5 drops three times daily after meals.

Liquor arseni et hydrargyri iodidi (U. S. P., Br. P.), Donovan's solution, containing one per cent. each of arsenic iodid and red mercuric iodid. Dose: 5 to 20 drops after meals.

*Medical Properties*: Caustic, antiseptic and tonic.

*Local and General Action*: If arsenous acid is applied to the unbroken skin, no change is produced, unless allowed to remain in contact for some time. Upon denuded surfaces or mucous membrane it acts as a slow but very persistent caustic forming, however, no compound with the albuminous or proteid materials of the cells. Its action, therefore, is not self-limiting as that of the true metal salts. It seems to act only upon living tissue. Taken internally, arsenous acid acts as an irritant. It does not combine with the albuminous contents of the stomach or intestines, but remains unchanged. Thus it stimulates the nerves and vessels and causes a sense of hunger by increasing the gastric functions. It is readily absorbed and quickly enters the blood.[2]

In overdoses arsenous acid is extremely poisonous. It manifests itself in a feeling of constriction in the throat, of difficulty in swallowing and violent pain. "Rice-water" stools or bloody diarrhea follow, the urine is diminished; cold, damp skin; giddiness, feeble pulse and respiration soon ending in collapse. Chronic poisoning usually follows the prolonged absorption of small quantities either from therapeutic use or from typical cases due to the presence of arsenic in the form of dyes in wall paper, clothes or in mines and manufactories.

If arsenic is taken habitually in small quantities, a tolerance to the drug may be established, as with the arsenic eaters of Styria and the Tyrol. It is claimed that it will improve the complexion and general appearance. As much as seven grains have been taken without ill effect at a single dose by a person accustomed to its use.

*Specific Action of Arsenous Acid upon the Tooth Pulp*: In 1833, Wood advocated the use of fly-stone (crude cobalt) for the destruction of the dental pulp. Three years later, in 1836, Dr. Skearjashub Spooner of New York, published an excellent little work, entitled, "Guide to Sound Teeth: or a Popular Treatise upon the Teeth," in which he recommends to the dental profession at large for the first time, the use of arsenous acid for the above purpose. "The nerves of the teeth may be certainly and effectually destroyed with little or no pain to the patient, and without the least danger, by means of a little arsenous acid applied to the nerves." Spooner claims to have learned this special application of the acid from his brother, Dr. John Spooner, of Montreal, Canada. According to Geist-Jacobi, Harris, of Baltimore, used arsenic in 1835 without having knowledge of Spooner's discovery. However, arsenic was utilized by dentists for other purposes as early as the beginning of the Christian era as recorded by Cornelius Celsus in his work, "De re Medica." The celebrated Arabian physician Abulkasem, living about 1000, in Cordova, Spain, describes in his remarkable work, "The Altasrif," the use of "Sandarac" for producing artificial ulcers about the roots of teeth to facilitate their ready removal. The Arabian term "Sandarac" is synonymous with red disulfid of arsenic, also known as realgar or red orpiment. Simultaneously, the above term sandarac is applied to a well-known resinous substance.

Dunning, Foster, Maynard and Westcott are among the first who strongly advocated the advantage of arsenous acid over the extirpation of the living pulps by means of instruments or by the actual cautery or over the "Hullihen operation" known as rhizodontrypy (1851). This latter operation consisted in "making a hole through the gum, the outer edge of the alveolar process, and the root of the tooth into the nerve cavity, and then in opening the blood-vessels of the nerves.'"

Since the introduction of arsenous acid for the purpose of destroying the dental pulps, many substitutes have been advocated but none have, so far, superceded it or taken its place.

Crude arsenic, known as cobalt*, fly-stone, or by many other synonyms has been much lauded by various practitioners (Arthur, Allport, Taft, Herbst, Dorn, etc.). It contains a very uncertain amount of arsenous oxid, and has no superiority over the pure chemical; therefore it should be dispensed with for such work.

In 1886, Adolf Witzel[7] published his memorable work, "A Compendium of the Pathology and Therapeutic of the Diseases of the Pulps of the Teeth," in which he trited to explain the action of arsenous acid as follows: Arsenic acts upon the diseased part of the pulp only, causing an increased influx of blood into the healthy part. A deeper penetration of the drug through the entire pulp and through the foramen is excluded; no chemical disintegration of the dentin takes place, a view which Baume at one time strongly opposed. Arsenic manifests a specific action upon the nerve-endings causing their disintegration. Miller[8] studied the action of arsenous acid upon pulps of teeth in dogs and rabbits and upon the tails of white mice; the latter, according to his views, bear a close resemblance to a tooth pulp. In some cases he placed a small glass ring over the tail fastening it securely over its root thus resembling somewhat the constricted apical foramen of the tooth. In other cases he encased the entire tail in a batter of plaster of Paris after previously applying a small amount of arsenic into a pouch of the skin. The most pronounced symptom in all cases manifested itself in an intense edematous swelling. The entire back and the hind limbs were involved, accompanied by pronounced anesthesia of the parts and paralysis of the legs. Death usually results in 24 to 36 hours, depending upon the quantity of arsenic used.

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*Cobalt, chemically, is a metal of steel-gray color; hard, ductile, and of a high melting point, resembling in its general characteristics, iron. It is rarely used in medicine. Unless specified, this metal cobalt is not sold in the shops; a number of its compounds, consisting largely of cobalt in conjunction with arsenic, nickel, iron, manganese, etc., are found in nature and are commonly called crude cobalt, cobalt-ore or simply cobalt. Metallurgists distinguish quite a number of cobalt varieties according to their composition, e. g.: smaltine, tin-white or speiss-cobalt; crude metallic arsenic, fly-stone or Scherbencobalt, etc., composed of about seventy per cent. of arsenous acid with cobalt, nickel, sulphur, etc. (it is a heavy black powder and usually sold in the shops by the name of "cobalt"), cobalt-bloom, erythrine or native cobaltic arsenate with about thirty-eight per cent. arsenous acid (a deep-blue powder); cobalt-glance with about forty-five per cent. arsenous acid; earthy cobalt or wad with no arsenous acid, etc.

Arkovy[9] presented a thorough investigation of the action of arsenic before the International Medical Congress in London in 1881. A short resume of his work will be of the highest interest. According to the amount of arsenous acid used, a partial or total hyperemia of the pulp will be the result. The blood vessels will enlarge and show signs of thrombosis, and embolism of the capillaries may result. The red blood corpuscles lose their color, most likely as a result of the chemic combinations of the arsenic with the hemoglobin, causing anemic collapse and shrinkage. The connective tissue fibers and the odontoblasts are not changed, while the connective tissue cells are greatly enlarged. The axis cylinders of the nerve cells usually disappear, the nerve cells themselves show a granular debris of the myelin. If kept in place for some time the arsenous acid will penetrate through the entire pulp. Other investigators followed the writings of Herz-Frankl and Schenk,[10] Julius Witzel,[11] Morgenstern,[12] Greve[13] and the classic researches of Gubler[14] upon the therapeutic action of this important drug are highly interesting. Binz and Schulz[15] explain the pharmaco-dynamic action of arsenous acid as follows: Living protoplasm possesses the power of constantly interchanging the atoms of oxygen which adhere to arsenic trioxid, viz: to convert the arsenous acid—$As_2O_3$ in arsenic acid—$As_2O_4$ and *vice versa.* This perpetual oxidation and reduction within the molecules of albumen causes a violent too and fro vibration of the atoms of oxygen and this is the cause of its therapeutic and toxic effect. The metalloid arsenic acts merely as a carrying medium of the active atoms of oxygen. According to Filehne,[16] all members of the arsenic-phosphorous-antimony group share the same property. As arsenous acid is not a coagulant of albumen or only very slightly so, its action is practically unlimited unless its molecules are broken up. Besides, the drug is readily absorbed and very diffusible. These factors are responsible for its deep action. If pulps, subjected to the influence of $As_2O_3$ are treated by the Marsh test, *no* arsenic can be found. Evidently some unknown chemic compounds are formed during its action upon living tissue.

Strangulation of the pulp about the apical foramen as the result of the arsenic action is not the direct cause of its death; in teeth with undeveloped roots and in deciduous teeth this process is very doubtful. Stasis, viz: the prolonged interruption of arterial circulation, as induced by this chemic poison, is the first step of the surrender of the organ, it is followed by granular dissolution of the blood corpuscles and inhibition of the nervous function.[17]

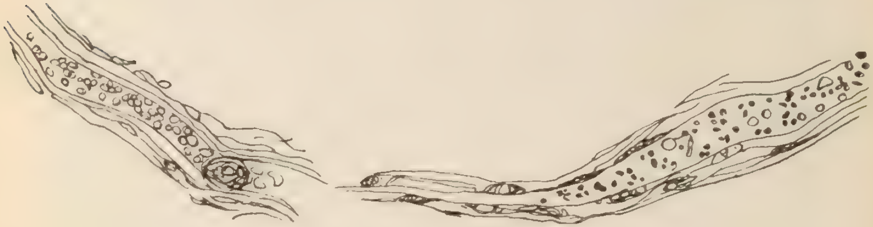


FIG. 1 FIG. 2

**Figs. 1 and 2—Blood vessels treated with arsenous acid (Arkovy).**

*Therapeutics*: In spite of the many substitutes offered, arsenous acid is still the most universal agent used for the destruction of the dental pulp. Usually, it is applied in the form of a paste. Additions of anesthetic drugs to the pure acid, such as morphin, cocain, iodoform, menthol, thymol, carbolic acid, creosote, the essential oils, etc., have been recommended to obviate the pain arising from its application. With the possible exception of cocain, the anesthetic value of the other enumerated drugs is very doubtful—especially is this true in regard to morphin, which has practically no effect upon sensory nerve endings. As a vehicle, a very weak solution of sodium chlorid in glycerin facilitates ready absorption of the acid. Some practitioners recommend lanolin (a natural wool-fat), for the same purpose. Hollader has suggested the addition of a small amount of charcoal as a coloring agent. Admixtures which are not readily soluble in the fluids of pulp tissue interfere with the quick action of the drug, some acting as foreign bodies and others being directly harmful by forming a superficial scab. Antiseptics are usually of no value in this connection; arsenous

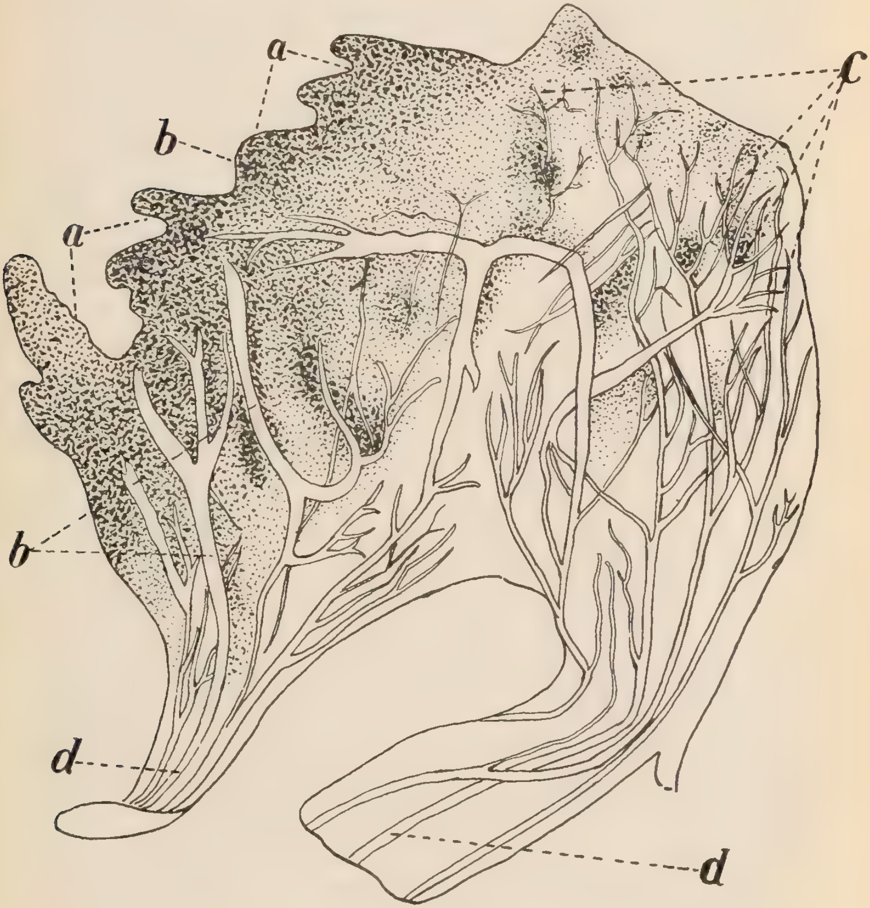


Fig. 3

Partially inflamed pulp of a lower molar treated for 36 hours with arsenous acid (A. Witzel).
*a*—Necrosed portion resulting from the action of arsenic.
*b*—Much enlarged blood vessels.
*c*—Numerous enlarged capillaries in the unaffected part of the pulp.
*d*—Enlarged arteries.

acid has sufficient germicidal power in itself, although it is a peculiar fact that bacteria possess a certain unknown immunity toward the acid. The pain resulting from the application of the acid upon the pulp is not so much due to the chemical itself as it is the result of its faulty application in all possible stages of inflammation. Discrimination between the various stages of pulpitis after a careful diagnosis is essential to successful treatment. The pulp should be exposed as much as possible to give ready access to the arsenic and the same time allowed for the usual swelling as a result of the action of the drug. If, for some reason, the pulp cannot be readily exposed, the arsenic should be placed within close proximity of the organ, it will act, although slower, through thin layers of dentin. Prior to the application of the arsenic, the cavity should be excavated as much as possible and the pulp should be thoroughly depleted either by puncturing the organ or by producing artificial anemia. Szabo[18] recommends for this purpose lavage, viz: the application of luke-warm water changed successively to cold water. Quicker results are produced by applying adrenalin chlorid solution under pressure. The cavity must be free from blood to prevent the formation of inactive arsenic-hemoglobin. If the pulp is inflamed and painful it is absolutely necessary to apply suitable remedies to relieve this condition before the acid is applied, otherwise continuous severe pain is certain to arise. Some of the essential oils, specially eugenol in combination with carbolic acid, thymol, tannic acid, etc., are indicated. According to Jack,[19] a weak solution of formaldehyd is very effective. These remedies if sealed into the cavity usually aleviate the condition in from 24 to 48 hours. If pus is present, it should be drained off and washed away with some antiseptic solution. If peroxid of hydrogen is employed for this purpose, all traces must be removed as it may oxidize the arsenous acid to the inert arsenic acid. The paste should now be placed in direct contact with the pulp by means of a blunt instrument or upon a depressed metal disk, a piece of cardboard, or upon cotton, and covered with a water-tight temporary filling of cement or the gutta-percha preparations. Personally, I prefer Fletcher's artificial dentin for this purpose. Extreme care should be exercised in this simple yet most important operation. Cotton fibers mixed with sandarac varnish as a retaining medium should be avoided, it is not water-tight and readily decomposes in the fluids of the mouth, besides it swells, causing pain from pressure upon the pulp. To prevent leakage, Harlan prefers to cover the arsenical dressing with an intermediate film of vaselin upon cardboard. In applying the temporary sealing it is essential to avoid pressure upon the dressing. In approximal cavities where overhanging tooth substances prevent ready access and, therefore danger of misplacing the arsenical dressing, gutta-percha packed between the two teeth and acting as a splint is of some service.

The amount of arsenous acid necessary for the destruction of a pulp is very small. About a sixtieth to a thirtieth of a grain or even a smaller quantity is ample sufficient. It is not only useless but decidedly dangerous to employ more. Dr. L. L. Buckingham, according to Harlan, has stated that he could destroy from ten to fifteen pulps with the same little pellet and still find arsenic in every pulp(?).

In decidious teeth, and in those of young persons, where the apical foramina are comparatively large, the arsenical paste should be diluted with an equal volume, or even more, of zinc oxid or some other bland material and left in the cavity a much shorter time. Martin[20] reports a case of a grown woman in which he applied arsenical paste upon the pulp of a lateral incisor; "the devitalizing agent passed out through the apical opening, as sloughing was most marked at apex, and the apical opening in the tooth was noticed to be abnormally large." Indeed, great care is to be exercised under all conditions with an agent so powerful as arsenic. Many practitioners are opposed to its use in the teeth of children. More than two teeth should not be subjected to this treatment at one sitting to prevent the possible chance of accidental swallowing of a larger amount of the drug.

The time required for the destruction of a pulp with arsenic depends upon many circumstances. In the young, on account of the great vascularity of the organ, from 12 to 24 hours is usual sufficient. In people of mature age, it is best to leave the application *in situ* from 4 to 5 days. This allows ample time for the breaking down of the entire pulp and its ramifications. However, many pulps do not require more than 2 or 3 days to succumb to the effect of the drug. After the removal of the arsenic it is well to apply some astringent drug, such as tannic acid or formaldehyd for one or two days which will generally facilitate the ready removal of the pulp *in toto*. Occasionally it will be found that in trying to remove the organ, the apical half is still very sensitive to the touch of the broach. If it becomes necessary to again apply arsenic into the root canal a very small quantity of the greatly diluted paste should be employed. In such cases some practitioners prefer to use the so-called "devitalizing fiber," which[21] is a dried mixture of coarse-cut cotton with arsenous acid, opium and other drugs.

A number of cases of severe toxic pericementitis, some even followed by necrosis of the alveolar process and consequently loss of one or more teeth resulting from over-doses of the paste are on record. Pulp-nodules occasionally obstruct the ready diffusibility of the drug. Removal of these calcarious deposits by means of a drill under cocain pressure anesthesia is indicated. Cocain should, however, never be applied cataphorically under these conditions, as the electric current will drive the previously applied arsenic through the apical foramen into the soft tissues. M. H. Fletcher[22] reports a case of this nature resulting in severe inflammation of the pericementum. Ritter[23] warns against the application of arsenic for the above purposes during pregnancy, claiming the teeth are less resistant and "softer." Occasionally one meets a patient who possesses an unexplained idiosyncrasy toward this drug.

*Toxicology*: If arsenic is swallowed in an overdose (two grains have been known to kill a man[24]) the proper antidotes should be promptly administered. Vomiting should be induced by the finger, the feather part of a quill or by an emetic. The official arsenic antidote—freshly prepared ferric hydrate with magnesia—given in tablespoonful doses every 5 or 10 minutes, or dialysed iron followed by common salt are the best means of chemically neutralizing the poison.

Local toxic effects of arsenous acid in the mouth are most frequently met with as the result of faulty application of the drug for dental purposes. Leakage of the dressing seal is responsible in most cases. However, contact of the mucous membrane with instruments accidentally carrying small particles of the paste, or the unnoticed squeezing out of arsenic resulting from the pressure applied in placing the retaining stopping are usual the cause. The fact that arsenous acid is odorless and tasteless increases this danger which is often only recognized after the mischief is done. Peso[26] relates a case in which arsenic applied to a lower left first molar caused destruction of the alveolar process and gum tissue ranging from the first bicuspid to the second molar. Close investigation revealed a minute perforation of the distal root. Faught reports a number of local arsenical intoxications resulting from the application of the rubber-dam which was not washed prior to its application. An examination developed the fact that the French chalk (soapstone) used for preserving the dam contained sufficient calcium arsenite to produce the affection. Power[28] describes a peculiar arsenical intoxication which resulted in the loss of the entire lower denture. The local poisoning was brought about by frequently cleansing the teeth with yarn which had been dyed with colors containing arsenic. In past and present literature many similar cases are cited. A word of warning may not be amiss: Extreme care should be exercised in handling this active poison to prevent not alone danger to the life of the patient, but also lawsuits for malpractice.

Arsenical intoxication of the gums presents in its early stages all the phenomena of true inflammation. Later, the surafce becomes denuded and it assumes a raw-ham color, the veins are distended, the border of the infected surface is raised with loss of substance in the depressed center—a typical pictur of an ulcer. Arsenic penetrates very deeply, destroying soft and hard tissues with almost equal rapidity. In the early stages the affection is not painful; however, as soon as the deeper structures are reached, severe pain is manifested.

The rational cure of this local affection consists in the thorough removal of every particle of arsenic. Forcible syringing of the affected parts with warm water, curetting of all gangrenous tissue until free hemorrhage is established with large spoon excavators or preferably a Volkmann spoon and removal of the necrosed bone with burs. After renewed washing, the entire affected surface is painted with dialysed iron to chemically neutralize any possible remaining arsenic and presently saturated with tincture of iodine. The pain is greatly relieved by applying a 20 per cent. orthoform ointment or by dusting the denuded surfaces with a mixture of equal parts of orthoform and starch. If sequestration of the alveolar bone continues, the application of aromatic sulphuric acid or phenol-sulfuric acid will be of great assistance in detaching the dead bone. A bland antiseptic, to be used warm and at frequent intervals, is indicated as a mouth-wash.

*Formulary:*

| | | |
|---|---|---|
| ℞ | Acid. arsenos | gr. xx. |
| | Cocain. hydrochlor. | gr. x. |
| | Sod. chlorid. | gr. j. |
| | Glycerin | q.s ut ft. pasta |

| | | |
|---|---|---|
| ℞ | Acid. arsenos. | |
| | Thymol | aa. gr. xx. |
| | Ol. caryophyl | q.s. ut ft. pasta |

—*Miller.*

| | | |
|---|---|---|
| ℞ | Acid. arsenos | gr. xc. |
| | Coc. hydrochl | gr. xl. |
| | Acid. carbol. cryst. | gr. x. |
| | Lanolin, q.s. | ℥ij. |
| | Fiat pasta | |

—*Harlan.*

## BIBLIOGRAPHY.

1 Merck's Index.
2 The United States Dispensatory.
3 Mitchell Bruce: Materia Medica.
4 Cushny: Pharmacology.
5 Geist-Jacobi: Geschichte der Zahnheilkunde.

6 History of Dental and Oral Science in America.
7 Adolph Witzel: Die moderne Behandlung pulpakranker Zahne.
8 Miller: Conservirende Zahnheilkunde.
9 Arkovy: Transactions International Medical Congress, London, 1881.
10 Herz-Frankl und Schenk: Oesterreich ung. Vierteljahrschrift fur Zahnheilkunde, Vol. XI., April.
11 Julius Witzel: Correspondenzblatt fur Zahnheilkunde, Vol. XXVII., July.
12 Morgenstern: Correspondenzblatt fur Zahnheilkunde, Vol. XXXII., January.
13 Greve: Correspondenzblatt fur Zahnheilkunde, Vol. XXXII., April.
14 Roy: Therapuetique de la Bouche et des Dents.
15 Binz: Arzneimittellehre.
16 Filehne: Arzneimittellehre.
17 Hermann: Physiologie.
18 Szabo: Oesterreich-ung Vierteljahrschrift fur Zahnheilkunde, Vol. XIX., April.
19 The American Text-book of Operative Dentistry.
20 Martin: Dominion Dental Journal, Vol. XIV., November.
21 Flagg: Dental Pathology.
22 M. H. Fletcher: Ohio Dental Journal, 1897, July.
23 Ritter: Zahn und Mundleiden.
24 Gabell and Austen: Dental Materia Medica.
25 Peso: Dental Cosmos, Vol. XLV., May.
26 Power: Dental Brief, Vol. VII., November.

# REGULAR CONTRIBUTIONS

## CASE FOR HOLDING REPLANTED TEETH FIRMLY IN PLACE.

BY J. K. DOUGLAS, D. D. S., SANDUSKY, OHIO.

The illustrations show a convenient method for constructing an appliance for retaining teeth, which have been removed by accident, or retain them in cases of orthodontia. The case referred to here, is a young lady about sixteen years of age, who fell down stairs, knocking the central incisor completely out of the socket. After treating the tooth and socket with antiseptics, and having removed the nerve and filled the canals in the usual way, I constructed the above appliance.

FIG. 1

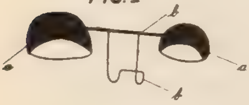


FIG. 2

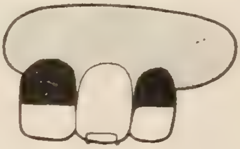
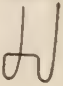


FIG. 3



First, make bands for right central and left lateral in same manner as one would in a retaining appliance in a case where the teeth have been regulated as (Fig. 1, A. A.). I then connect these bands with a bar heavy enough not to spring as (Fig. 1, B). Then take a piece of irido-platinum wire about 20 gauge, and by bending, construct a stirrup, that will catch over the cutting edge and extend up the labial surface to the bar as (Fig. 3). With the bands and bar in proper place, ascertain the length the stirrup should be and solder to bar as (Fig. 1, B). After the tooth is placed in the socket, fill the band with soft cement, place the appliance in position, and force to place, catching the stirrup over the cutting edge of the replanted tooth, carrying it to its normal position as (Fig. 2) and hold firmly until cement sets hard enough to hold it.

The same appliance may be used where there are more than one tooth to be held in position. The advantage of this appliance is, that it holds the teeth firmly in place, is not uncomfortable for the patient to wear, is cleanly, and may be left any length of time one desires.

# PORCELAIN ART. INLAYS—SOME SUGGESTIONS CONDUCIVE TO SUCCESS IN THE PRACTICE.*

BY H. W. ARTHUR, D. D. S., PITTSBURG, PA.

The highest art is said to be the concealing of art.

The inlay, applied with skill, is the ideal of art in operative dentistry. The use of the porcelain inlay was the outcome of the desire to conceal the ravages of caries. The practice has extended until the practicability of securing a matrix is the only limit to its application.

The time limit will not permit, nor is it necessary at this time to give in detail the methods of making porcelain inlays. These have been exploited so often and so recently, that even those who have not taken up the practice ought to be familiar with the procedures.

To succeed in the practice, each and every step should be conducted with care and exactness. The rules for the preparation of margins should be strictly observed. The outlines of cavities should be in definite curves and straight lines. The margins of cavities should be at right angles with the surfaces of the teeth. The margins should be smooth. This means something more than the ordinary care shown in the preparation of margins for the filling operation. Where cavities are of direct access the forming of a matrix is not difficult. Proximal cavities, where two or more surfaces are involved, are more complicated. Dr. Reeves' method, the use of wet cotton, for general adaptation to the cavity, linen tape and a strip of rubber dam for margins, is most efficient. Where the cavity is difficult to approach and the space limited, as on proximal surfaces, a perfectly adapted matrix may be distorted in the removal. Exactness is so necessary that a slight distortion not observed, it may be, until the matrix is stripped from the inlay, must be guarded against. An efficient *expedient* in such cases is, after the matrix is fitted and resting in the cavity, in place, to fill the matrix with pure beeswax, not too soft. This should be trimmed to the margins, so that there will be no interference with the removal of the matrix. Beeswax may be also used as an expedient where, after stripping the matrix, the inlay is found defective in some part. A new matrix is adapted to the cavity, the inlay is placed in the matrix, held firmly in place and bee-wax rather hard forced into the defective outlines. The bee-wax can be readily removed by placing the matrix in the mouth of the muffle. It may be somewhat startling to the novice to see the inlay, at first turn black, but every trace of the wax will burn off and disappear. To avoid any possible change in the form of the matrix, it may be invested in asbestos powder before attempting to remove the wax.

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*Read before the Lake Erie Dental Society, Cambridge Springs, Pa., May, 1903.

Inlays are the severest tests for porcelain shades; no more difficult task presents itself than that of accurate matching. It must be born in mind that the dry shade of a tooth is not the same as the moist, that the shade matching the labial surface will be dark on the proximal (within the "shadow lines").

The selection of shades in the porcelain filling materials is a problem to be worked out in each particular case. Mass shade is not so perfect, nor is it so readily controlled, as the body and enamel shading. Shade effects are simplified by the use of shaded body for the bisque baking and by the use of porcelain enamels, combined shades, or separate application; that is, one layer of shade over another, or surface blending.

The swaged matrix, which can be duplicated, affords a means for baking several inlays of different shading, from which a selection can be made for insertion.

A likely change in the appearance of the shade of the inlay when inserted in the oxyphosphate must not be lost sight of. To some extent this may be controlled. An enthusiastic porcelain inlay worker says: "An inlay built up in layers will prevent the reflection of the cement through from beneath." An increase in the number and variety of shades of the oxychloride is desirable.

An inlay when finished should have well defined margins; a feather edge may fracture and leave a ragged, imperfect margin. The time to avoid this is at the final touching up of the porcelain filling material, before placing it in the furnace A fine camel's hair brush, slightly moistened, should be used, brushing towards the filling, taking away all fine particles.

One thing in the practice of making porcelain inlays has been very much simplified; that is the fusing of the porcelain materials. The small furnaces, especially the electric, work admirably. A knowledge of the fusing points of porcelain materials once attained, definite results thereafter are assured.

With simple inlays the removal of the glaze from the imbedded sideisall that is necessary to insure retention. With contour inlays, while some claim to have no difficulties, such has not been our experience. To overcome a difficulty of this kind in a superior cuspid, mesio-incisal angle to be restored, a resort was made to reducing the contour to a simple cavity, by restoring with gold the lingual and proximal surfaces and the incisal edge; the force of the bite being on the gold. A simple inlay was inserted in the gold, labial surface. In another case, mesial surface of an upper first bicuspid, an inlay, made for the mesial surface, extending beyond the mesial ridge, occlusal surface; the extention of the inlay, along the occlusal surface, was cut down, inside of the mesial ridge;

a filling, previously inserted on the occlusal and distal surface, was partially cut out, shaped for retention, and refilled, overlapping the reduced portion of the inlay.

## PORCELAIN CROWN WORK.*

### BY J. MAURICE CROSBY, D. D. S., FRANKLIN, PA.

The ground covered by this subject has been so thoroughly gone over by Drs. Goslee, W. A. and F. J. Capon, and others, that I question my ability to add much that is original to what is already known. My purpose, therefore, in the short time allotted me, shall be rather to lay special stress on some of the more important points to be observed.

In the construction of porcelain crowns it must be constantly borne in mind that porcelain has strength in proportion to its bulk, and such crowns should be indicated only where sufficient space to give the required body and strength, may be obtained. To use a porcelain crown when the occlusion of the opposing teeth is very close, allowing but a small veneer of porcelain, would show very poor judgment on the part of the operator, for the porcelain would soon fracture. Here nothing but a metal-backed crown would meet the requirements.

In the large majority of cases, however, sufficient space may be obtained to give adequate bulk to the porcelain, thereby insuring stability and permanence in the finished crown, and allowing its almost universal application for the ten anterior teeth. Let us consider, briefly, some of the advantages to be derived from the use of the all-porcelain crown. These include the entire absence of gold as a backing; the avoidance of the blue line so often seen at the joint between the facing and backing at the cutting edge; the maintenance of the almost perfect translucency of the crown, and the superiority, as regards its hygienic qualities, of porcelain to any metal.

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*Read before the Lake Erie Dental Society, May, 1903.

Furthermore, I think it is now generally conceded that a facing which is held by a porcelain body fused to the entire lingual surface, as well as to the pins, is stronger than one in which the strain comes entirely upon the pins, as is the case when metal backings are used.

The jacket crown forming the subject of another paper, I shall confine myself to the banded and half-banded crowns.

### THE FULL-BANDED CROWN.

The use of this crown, so far as my experience goes, is decidedly limited. Unless the adaptation of the band to the root is perfect—which, alas! is so seldom the case—it impinges upon either the gum tissue or peridental membrance, thereby causing congestion and recession of the gums, a result at once unnatural, unhealthy and unsightly. As an attachment for bridges, however, and in cases which present weak or split roots, I have made extensive use of it in my practice.

### CONSTRUCTION.

The method of root preparation is similar to that for the Richmond crown, except that the root should be finally cut as short as possible, in order to give all the space needed for the bulk of porcelain. The shaping of the root and band will, however, be greatly facilitated if the root be temporarily allowed to project at least a 32nd of an inch above the gum line. This will simplify what would otherwise be a difficult and painful operation.

The gauge of the platinum band should be as thick as 29 for centrals and cuspids, and 30 for laterals and bicuspids. The ends should be lapped about an eighth of an inch, as butted ends would separate in fusing the porcelain. Solder with pure gold, using the smallest quantity necessary, and be sure of absolute contact of the parts to be soldered. Any excess of gold after soldering should be absorbed by and alloyed with the platinum, by the application of the fine flame of the blowpipe, continued for a few seconds. This precaution, as well as the necessity of absolute contact, applies also to the attachment of the floor to the band and the dowel to the cap. Failure to observe them, as has been repeatedly pointed out by Dr. Goslee, results in the opening and weakening of the joint in the fusing and, when the excess of gold is covered with porcelain, in the porosity of the latter.

The floor should be of platinum, gauge 32; the dowel of iridio-platinum wire, square gauge, 14 for centrals and cuspids and 15 or 16 for laterals and bicuspids. I believe the dowel should be a 32nd of an inch longer than the facing, in order to insure the retention of the crown. We will assume that the cap and dowel are fitted and in their proper position, and that the band is covered by the free margin of the gum on the labial side, and distinctly bevelled, to allow the cervical end of facing to fit over the band at this point. This slight overlapping of the facing gives solid attachment to the thin veneer of porcelain, which should always be fused to the labial surface of the band and facing, there being no physical union between porcelain and platinum. If the platinum band on the labial surface is not covered by the overlapping of the facing, it will betray its presence by a bluish cast which it imparts to the gum tissue, showing a dark blue line at the margin.

An impression and bite is next taken and a facing of the proper shade and size selected. Preference should be given to the American facing, as its high fusing qualities insure greater strength and reduce to a minimum the liability of burning out the color. Do not attempt to fuse a high fusing body to an Ash facing, which is a medium or low fusing porcelain, for the heat required to fuse the body would entirely burn out the color in the facing.

In the case of the six anterior teeth, a proper consideration for the patient's comfort and appearance demands a temporary crown. A limited supply of the Davis or other inexpensive crowns can be kept on hand for the purpose, and it is but a moment's work to select a suitable one for the case in hand, and mount with temporary stopping. For the bicuspids I make a crown by moulding white gutta-percha around tacks to approximate the shape of the tooth, using an excess of the gutta-percha on the masticating surface, thereby affording separation enough to preserve the proper contour in the finished crown. The dowel and the inside of the band should be coated with a thin film of wax before running the impression. This will facilitate not only their removal, but also their replacement after fusing in order that the occlusion and restoration of contour may be observed.

Care should be taken to so grind the facing that the pins can be bent into direct contact with the floor of the cap, as well as with the dowel, and as near the porcelain as possible, especially in crowns of the six anterior teeth. This is a most important point, for, as suggested by Dr. Goslee, it affords opportunities for the same degree of strength in the union of these parts with the cap, and also adds to that of the crown by getting the metal parts out of the way. As a result they do not divide the porcelain through the center, or interfere with the proper and desired contour of the lingual surface.

Want of space in the case of narrow and small laterals sometimes obliges us to make use of a pinless tooth, or veneers such as are used for porcelain jackets. It will then be necessary to roughen or groove the projecting end of the dowel and spur the floor of the cap, in order to insure mechanical union of the porcelain. A considerable body of this should be fused to the projecting end of the dowel before the veneer is attached, thus guarding against extreme shrinkage and consequent change of position of the veneer in the final baking.

## STRENGTHENING THE LINGUAL CUSP.

In crowning bicuspids where the bite is short, and where the lower cusp occludes in the deep sulcus it becomes necessary to strengthen the lingual cusp if we would prevent fracture of the same. This may be accomplished by adjusting and soldering a band of iridio-platinum plate, gauge 28, around the lingual edge of the cap, extending nearly up to the coronal surface of the crown. After investing and soldering, any surplus ends of the dowel or pins should be ground down and made smooth; for the body will not fuse securely to sharp angles, but draws away from them, making a weak spot in the crown to invite fracture. The porcelain body should approximate as nearly as possible the fusing point density and shade of the facing. Use distilled water for mixing, and have all parts absolutely clean. The body should be applied gradually, and the moisture frequently absorbed by a fine quality of blotting-paper cut in convenient pieces. The body should be sufficiently built up and carved to duplicate the characteristics of the tooth to be replaced; and great care should be taken to restore the normal approximate contour. If the amount of surplus to overcome shrinkage has been nicely calculated, two bakings will be sufficient.

The crown should be placed at the open face of the muffle and allowed to heat up gradually, before being put inside. This will burn off any carbon and prevent gassing. To avoid a fracture after baking, from possible drafts in the room, transfer the crown quickly to an asbestos pad and cover over with a small glass.

Porosity of the body, as has been truly stated by Dr. Goslee, is largely responsible for failures in this work. It may be due to any one of three causes: imperfect packing in applying it; the use of too much pure gold in soldering; or over fusing.

A wise precaution, before cementing the crown, is to coat the dowel and inside of the cap with a solution of chloro-percha, thereby insuring the easy removal of the metal parts in the event of fracture of the facing. Or the crown may be set by moulding red gutta-percha base-plate around the dowel and inside of cap, as described and indorsed by Prof. Guilford in a recent number of the *Stomatologist*. Seal the end of the root with a medicated gutta-percha point, and thoroughly dry the projecting end of root and surrounding gum tissue. For this purpose nothing equals the electric hot-air syringe, connected with a suitable compressed-air outfit. By its aid absolute dryness of the parts may be secured and retained, and the setting of the cement hastened. The crown should be held under pressure until the elasticity of the cement is overcome.

### THE HALF-BANDED CROWN.

I should like to call your attention briefly to a crown which has a wide range of usefulness in my practice, and which, if I am not mistaken, was first described by Dr. F. J. Capon in the *Cosmos* for February, 1902, viz.: the semi, or half-band, porcelain crown. Lack of time forbids me to more than mention the points of constuction in which it differs from the one already described.

The labial face of the root is ground under the free margin of the gum, but the lingual surface, where the occlusion will permit, is left projecting slightly. With enamel-cleavers remove the entire ledge of enamel on the lingual surface, and enlarge the canal to receive a square iridio-platinum dowel, whose adaptation should be so close as to hold it firmly in position. The depth of the canal is then marked on the post, and it is pushed through a disk of platinum, gauge 35, somewhat larger than the face of the root, and soldered at the mark with pure gold.

The dowel and disk, in their proper positions, are next forced into place on the root; the close adaptation of the dowel to the canal holding the disk rigidly in position while it is being burnished down to the face of the root. Carry the burnishing well along the edges, which will be distinctly defined on the platinum. Remove and trim away the surplus, leaving sufficient on the lingual half to form the band. Turn this approximately to the line of the root with a fine-nosed pair of pliers, replace on root and burnish till the platinum lies snugly to the face of the root, and the banded portion is closely in position. Use surplus enough to reach and pass beneath the gum line. If the burnishing of the band is made difficult by the length of the root, its adaptation may be facilitated by cutting a V-shaped notch in the center of the lingual half of the band.

An impression and bite is next taken, and the facing ground to fit the labial surface. The pins are bent to touch the post, and the facing, held in its proper position by hard wax, is removed from the model, invested, and the pins and post soldered together with pure gold. It is my practice to try the crown in the mouth before baking, reburnishing to the face of the root in order that the fit may be perfect. In baking, the porcelain should be carried well over the band, thereby gaining strength and rigidity, and giving contour to the finished crown.

This method has the merit of being simple and expeditious, as well as less tedious and painful for the patient, than the adaptation of the full band. The joint on the lingual surface is covered and protected, and as the strain on a single crown in the six anterior teeth is upward and outward, the partial band guards against stress in that direction. Finally, we may feel confident that the normal, healthy condition of the gum at the cervical margin will be maintained. Particularly in the mouths of women is this an essential feature.

In closing, I wish to make as strong a plea as possible for the more general application of this very important branch of dentistry. The glaring display of gold crowns in the mouths of the American people to-day is a disgrace to the profession we represent. It is the profession, and not the people, who is responsible, though I am well aware that much of the blame for such a state of affairs may be laid at the doors of the dental parlors. But with the facilities now afforded for the reproduction of the natural teeth in porcelain, I consider it the duty of each one of us to endeavor to perfect himself in this line of work.

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# JACKET CROWNS.*

### BY DR. A. C. M'ALPIN, WARREN, PA.

The application of the jacket crown is indicated in those cases where the tooth is beyond successful structural restoration by filling, to peg teeth and to teeth that are slightly out of correct position and in these cases where the retention of the life of the teeth is desirable.

It is contended that a more intimate knowledge of and practice with this crown will induce many who now, with the utmost impunity, destroy tooth-life, to take the little extra pains necessary to produce the permanent artistic jacket, and at the same time conserve the normal life energy which is better, no matter what specious arguments are made to the contrary.

The jacket crown is simple in its construction and yet is susceptible to the greatest skill in its application. Briefly stated, the crown consists of a platinum shell fitted over a stub of tooth and upon which is fused porcelain body with a veneer facing.

As these crowns are used mostly on the anterior teeth I will describe a case as applied to an incisor. The tooth is dressed down to a wedge-shaped stub with lingual ground sufficiently to accommodate a 28-gauge plate and a labial space of at least 16-gauge. The cervical ridge is obliterated.

A cylindrical platinum band lap joint 30-gauge as long as the original crown is fitted at the cervix. This is then held in position while on the lingual portion a line is scratched along the cervical margin and at the linguo-distal and mesial angles. The space within these lines is then ground with a coarse dry stone until very thin and the metal burnished down until the lingual aspect is shaped as the surface on the finished crown should appear. This surface is then reinforced by another platinum plate, 30-gauge, which is burnished and shaped to it and soldered with pure gold. The labial portion of the cylinder is then ground in the same way and the metal adapted to the stub by rough-end instruments to prevent burnishing as the fresh-ground surface affords strong adhesion to the porcelain body.

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*Read before the Lake Erie Dental Society, May, 1903.

High heat porcelain body is then fused to the ground labial surface, bringing the body to a good flux only. Then a suitable veneer facing ground thin is attached with added body by the second baking. The metal back is finished as metal crowns usually are and the jacket is adjusted as is the ordinary shell crown.

In this era of porcelain dental work the jacket fills a position which is unassailable by any other form of crown. Attempts are made to attach ordinary facings to gold shells but these must necessarily be bulky and bungling when compared to the true jacket crown.

Once one familiarizes himself with the possibilities in the application of the jacket crown, he opens the way to far more satisfactory work than was possible before.

It is worth one's while to begin porcelain work as early as possible for its varied uses tend to bring out the operator's talent, manipulative and artistic ideas, more than in any other phase of dental labor.

## LABORATORY HINTS.

BY D. E. SHEEHAN, D. D. S., HAMILTON, OHIO.

An Aid in Carrying Pumice.—When using felt cones or wheels in polishing rubber plates, gold crowns, etc., hold a piece of soap against the wet cone before applying the pumice. The soap on the cone prevents too much heat and will also carry the pumice.

To Keep a Supply of Soft Wax.—Punch a hole the size of your Bunsen burner in the bottom of a seamless salve-box. Push this down to a point just above the air-holes in the burner and solder in place. Fill box with scrap wax, and when the burner is in use you will always have an abundance of soft wax. With this convenience you will save the time usually consumed in picking up and balancing a piece of hard wax on the end of your spatula, in heating it.

To Prevent Bruising Plate When Swaging.—In swaging metal plates, that you will not bruise your plate, get a rubber tip usually used on crutches. Put this on the large end of your horn mallet and proceed.

A Soldering Hint.—When you solder your bridge, first of all have the investment hot. When using the blowpipe do not blow a strong blast, but blow gently enough to have a yellow streak in the flame from the pipe to the piece to be soldered. The yellow streak is essential. You can drag the solder with a piece of strengthening bar stuck in the end of a pine stick.

To Burnish Backing Over the Edges of Teeth.—In backing up facings for bridges and crowns with heavy plate, especially cuspids, it is sometimes hard to burnish the backing over the incisive edge. To facilitate matters split the backing in several places parallel with the long axis of the tooth to the line where the plate is to bend. It will then burnish over easily. Go over this surface once with a file and it will hug the tooth perfectly.

Rapid Repair.—For rapidly repairing a plate when one or two teeth are broken out, dovetail the plate back of the pins set in the tooth and pack in a quick-setting amalgam. It will hold as well as a rubber patch.

Care of Seamless Crown Outfit.—Before putting away your seamless crown outfit after using, paint the holes in the draw-plate with oil. This prevents rusting of the plate, and the oil prevents stretching and consequent thinning of the gold in your crowns. Never drive gold through dry holes.

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# METHOD OF RELIEVING SENSITIVE DENTIN.

### BY I. B. KENNEY, D. D. S., PARK RAPIDS, MINN.

In the case of cervical cavities which are always very sensitive, I use a local anesthetic hypodermically exactly as for extracting. Put on dam and dry thoroughly, touch with carbolic acid followed by warm air. Use sharp burs and run engine fast. The adjusting of clamp cannot be felt no matter how far below the gum the cavity extends.

It works splendidly with me and is worth trying on your next case.

# TWO PRACTICAL SUGGESTIONS.

### BY DR. HENRY KNOWLES, WASHINGTON, D. C.

To Make a Dentimeter.—Take the bone handle of an old mouth-mirror; break off the screw, if it is not already broken; with file or stone, flatten the end for a quarter of an inch or more; drill two small parallel holes.

To Make New Post for Richmond Crown.—When post has broken, with wheel burs and small stones, dress down remainder of post so that it is flush with cap; solder new post to a disk of platinum that approximates size of band; cut platinum so that it fits snugly inside of band; the base of post must be ground flush with cap; use minimum amount of solder in uniting new cap to band. The repaired crown simply has two caps.

# CLINICS.*

## COMBINATION FILLINGS.

### DR. J. W. CLARK, OF LOUISVILLE, KY.

This clinic consisted of combination fillings, amalgam and gold at the same sitting, using it in proximal cavities of biscuspids and molars, employing tagger's tin or German silver for band matrix. The clinician adapts the matrix to the tooth to be filled in the usual way, takes floss silk or any strong silk thread, and wraps it around the tooth and matrix several times, drawing the matrix firm against the cervical margin of the cavity, to give it firmness enough to resist the pressure used in filling the cavity. Pack amalgam in the cavity, one-fourth, one-third, or one-half full, as desired. Amalgam should be packed in well. Start with De Trey's gold immediately on top of medium soft amalgam. First pieces of gold will disappear. After about the fourth piece, the gold will be seen to assert itself. Fill along until the tooth is completed. Take off the matrix, smooth gold down if it occludes too much, dismiss patient until next day, then one can take strips and polish down filling on proximal surface. The amalgam having become thoroughly hardened, there is no danger of veneering the gold filling with mercury. The clinician claims ease of adaptation and manipulation over gold at the cervical margins, making a better filling than gold alone.

## GOLD FILLINGS.

### DR. A. G. FEE, WEST SUPERIOR, WIS.

A mesio-occlusal gold filling in an upper second left biscuspid. Cavity preparation after Dr. Black's method. The gingival third filled with unannealed foil, consisting of three-

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*From report of clinics given at Odontographic Society meeting, February, 1903. We are indebted to *The Dental Review* for advanced proof.—Editor.

quarter sheets, and one-half sheet of No. 4 foil, folded into ribbons a little wider than the seat of the cavity, and with a Swiss broach rolled into cylinders. One-quarter cylinder placed in the linguo-gingival angle, one in the bucco-gingival angle, and one more placed beside the one in the linguo-gingival angle. The half sheet placed between those already in place, and all four cylinders driven home. The cylinders are placed horizontally in the seat, with one end resting against the pulpo-axial wall. The filling completed with annealed foil for restoring original contour, the point of contact, and preserving interproximal space.

## BANDED DAVIS CROWN.

### DR. C. R. TAYLOR, STREATOR, ILL.

A banded Davis crown, second left upper bicuspid, using platinized gold for band and cap, the band and cap soldered with 22k plate gold, and band and cap contoured with 22k solder. A little moist whiting is placed in the cap, after being soldered with the plate gold, to prevent the 22k solder from flowing inside of the cap. The chalk simply forms a cloud over the inside of the cap, and thus does not injure any investment. The band is gauge 32, cap 34. When the root is prepared for the pin, it is countersunk with a bur slightly larger than the diaphragm of the Davis pin. The cap is placed in position on the root, the pin is passed through the holes in the cap, and driven up so as to countersink the diaphragm of the pin into the top of the cap. Both are removed and placed on the soldering block, which has a pinhole; pin is tacked to the cap with a small piece of 18k solder; both are returned to the root and properly adjusted, then taken off and returned to soldering block and properly soldered, and top of cap stiffened with 18k solder. If care and judgment are used, neither impressions nor investments are needed in making the cap or adjusting the Davis crown for the ten anterior teeth. Platinized gold plate was used, because solder does not so readily flow over platinum, and thus it is possible to make a cap without investing it.

## GOLD FILLING.

### DR. STANLEY REED HOLDEN, DULUTH, MINN.

A disto-occlusal gold filling in an upper right first bicuspid. Preparation of cavity after the method of Black; Wedelstaedt method of building and filling, which consists of the use of cylinders of non-cohesive foil in the seat of the cavity as the beginning of the filling, binding these in and finishing with cohesive foil, the latter being anchored in step portion of cavity and gradually extending back and over the non-cohesive cylinders.

## TECHNIC OF PULP ANESTHETIZATION.

### DR. U. D. BILLMEYER, CHATTANOOGA, TENN.

Grind to a powder hydrochlorate of cocaine crystals on a glass slab with a spatula, incorporating enough carbolic acid (95 per cent.) to make a thick paste. Apply this paste freely over the exposed pulp and inject by placing beeswax (not base-plate wax) in the cavity in such a way as to bring it well over the borders of the cavity, when gentle pressure can be applied on the wax over the paste and exposure, until the patient shows sign of sensation. Then discontinue the pressure for a moment, until the surface of the pulp becomes slightly deadened, when pressure can be renewed until no sensation is produced, then the pulp is removed with little or no pain.

## PAINLESS DEVITALIZATION FOR GOLD CAP.

### DR. J. LOWE YOUNG, DETROIT, MICH.

This clinic consisted of a demonstration of the painless preparation of a vital tooth for a gold cap to be used as an abutment in bridge-work, by the aid of cataphoresis.

1. Expose some of the dentine, preferably on the occlusal surface of the tooth. This is easily and almost painlessly done with a knife-edged carborundum disk (kept wet) in the engine.

2. Apply dam and thoroughly insulate, so that current cannot pass between neck of tooth and rubber. Chloro-percha is efficient for this, and if a clamp has to be used, it should be thoroughly coated with chloro-percha.

3. With negative electrode in hand and positive carrying a small pellet of cotton, moistened with a saturated solution of cocaine placed in contact with dentine, instruct the patient to gradually turn on the current with the other hand. This will usually take from five to ten minutes to get the controller up to one hundred points. It is then left at this point for ten or fifteen minutes, or until such time as the positive electrode can be removed from the tooth and replaced without causing pain. Then remove dam and grind the tooth to shape, which usually requires that all the enamel must be removed.

4. Readjust dam and coat the tooth with silver nitrate, closing up the dental tubuli, thus rendering pulp immune from shock, from thermal change, or from irritation from phosphoric acid in cement.

## GOLD INLAY.

DR. FRANK T. BREENE, IOWA CITY, IOWA.

A gold inlay; cavity, mesio-incisal right central incisor. Occlusion, direct incisal. Preparation, gingival and incisal steps. Retention, staple of iridio-platinum wire passing through matrix into depressions in gingival and incisal steps. Matrix made of pure gold, 35-gauge; contour of 22k solder.

## GOLD FILLING, A COMBINATION OF BURNISHING AND SWAGING.

### DR. MILLS, BRANTFORD, ONTARIO.

The cavity is prepared as usual, and then the floor and lower third of cavity are varnished with a varnish made of white shellac, two parts, and gum spar, one part, dissolved in pure alcohol, and when dry enough to just stick a little to the fingers, pat in from two to four thicknesses Watt's crystal strip, or other gold, and with a piece of separating rubber or any elastic rubber force the gold into every part of the cavity with one push. After waiting about a minute, burnish the gold thoroughly over all margins, and after waiting a minute or so for the varnish to harden, commence burnishing the filling in, being careful not to overheat the gold, nor to rub too heavily, as the gold will not weld if too much pressure is used. Many makers' gold can be burnished in, but not all. For this purpose use Reynolds' and Watt's crystal. Dry out the cavity thoroughly with absolute alcohol before putting the varnish in.

## METHOD OF BAKING A LOW-FUSING INLAY.

### DR. ALEXANDER JAMESON, INDIANAPOLIS, IND.

Take a cavity impression with "Archite;" mount it in a metal ring in a matrix of modeling compound. He places this ring in his swaging device and swages a small sheet or plate of pure gold over it. He takes away the resulting matrix and anneals it, then replaces on cavity impression, and puts a considerable quantity of moss-fiber gold upon it, and swages strongly. This gives him a matrix that is unshrinking and unchanging for all baking which he desires to do. With this matrix he bakes his low fusing body over a Bunsen burner. The advantages of this method are absolute accuracy of fit, minimum amount of time expended, and dispensing with a furnace.

## THE COGSWELL CROWN.

DR. J. W. PUCKETT, GENEVA, NEB.

A superior central is used and ground to perfect union, length and articulation, making allowance for a thickness of 28-gauge plate on the lingual surface; then a piece of 28-gauge gold plate, large enough to cover the lingual surface, is bent to approximately fit the lingual surface of the porcelain, and held in position on the porcelain with the thumb while a small sharp instrument is passed through the hole in the porcelain from the neck end of the crown, and a scratch made on the gold plate to indicate where the pin should be attached to it; the gold back is then placed on the asbestos block with the scratch up; the end of the pin is ground to a bevel to correspond with the bevel of the lingual surface of the porcelain, and leaned against the raised part of the asbestos block, letting the beveled end of the pin rest flat on the gold backing at the place indicated by the scratch, and pin and backing soldered together. The pin is then inserted from the lingual surface of the porcelain, bringing the gold down close to place; surplus edges of gold trimmed away and backing burnished to porcelain. The porcelain is then placed in the mouth without the pin, and held in correct position, while a drill is passed up through the hole in the porcelain, using it as a guide to insure correctness in starting the opening in the root to receive the pin; the canal is then opened to the correct size and depth for pin; the crown is tried with the pin in position, and, if the pin is not quite the correct angle to allow the crown to go up to place perfectly, the porcelain should be removed from the pin and the pin bent with the pliers until the correct angle is obtained, when all will go to place perfectly. This is then removed and dried, and a small quantity of thinly-mixed cement placed around the pin between the backing and porcelain, and then the backing thoroughly burnished and polished; it is then mounted with cement the same as any crown, with a fixed pin. The occlusion of the antagonizing teeth comes directly on the head of the pin, thus saving the porcelain.

## THE STAPLE CROWN.

DR. F. L. MARSHALL, BOSTON, MASS.

The principal difference between Dr. Carmichael's crown and the author's is that he (Dr. Carmichael) burnishes gold into grooves made in the teeth to be crowned, while Dr. Marshall uses a platino-iridium staple. This staple crown he has used for different purposes for five years or more, with very gratifying results.

As to the preparation of any of the six front teeth for the crown, the author says: "Take the enamel fissure bur, have your assistant keep a fine stream of cold water running over the tooth, and quickly cut into the side of the tooth to the depth of the bur. Repeat the same on the opposite side, having the grooves come just back of the contour. Then connect the grooves across the tooth by the use of an enamel bur or a small stone. If the articulation is very close, grind off enough to allow for the thickness of the crown. Then knife-edge your tooth from the cross groove to the point as you would an artificial tooth before backing up.

"Next select your piece of platino-iridium wire, a trifle smaller than the bur; bend a right angle on the end long enough to fit one proximal groove. Take the distance across between the grooves in your eye, and bend another right angle in the wire at that distance, thus forming the 'staple' which gives the crown its name. Cut the ends of the staple the proper length to fit the grooves, having the cross-bar flush with the palatal portion of the tooth. Now take a thin piece of pure gold, from 30 to 35-gauge, large enough to fully cover the back of the tooth. Take your staple in a pair of pliers, and hold in contact with the piece of pure gold at a slight angle. Solder with 22-k solder at the point of contact. Bend the gold loosely around the sides of the staple, and trim cervical portion. Place the staple into the grooves, and burnish the gold firmly to one side. Remove and solder. Replace the crown, and burnish all around back of tooth tightly to the opposite side. Remove and solder. Now replace and burnish all around the free edges. Trim off the surplus; remove; flow 20-k solder over the outside of the crown, taking particular pains to leave or to keep the edges of the pure gold to about one-thirty-second of an inch free from solder. These edges are to be burnished tightly to the tooth when the crown is cemented into place. The burnishing is to be done before the cement hardens.

"The construction of a bicuspid or molar crown is very different from one for any of the six front teeth. The first thing to do is to grind off the inner cusp and straighten the walls of the back part of the tooth; then cut the grooves in the anterior cusp just as you would in a cuspid. Cut a band of 22-k gold as you would to make a full crown, only not quite so long. Solder one side of the staple about one-sixteenth of an inch from one end of the band. Place the staple on the tooth. Draw the band around the tooth to the opposite side. Burnish tightly to the neck. Remove; push the free end of the staple back about the distance of one line, so as to assure a tight fit, and then solder. Strike up cusps, preferably of 22-k gold, fit to the top of the band, and solder at the inner point of contact. Put in place on the tooth. Allow the patient to bite firmly to give correct occlusion. Burnish to the cutting edge of outer cusp. Remove; trim and fill the inner cusp with solder up to the cross-bar of the staple. Allow the solder to unite the joints between the cusps, and the band at the outer or buccal cusp. Burnish all around the edges, and the crown is finished.

"The lower teeth are treated in the same way as the upper, only that a smaller wire must be used."

## ORTHODONTIA.

### DR. EDWARD H. ANGLE, ST. LOUIS, MO.

Dr. Angle gave a table clinic on orthodontia at the Odontographic Society, which awakened much enthusiasm among those interested in this branch of dental science. It consisted of a large number of very accurate and artistically made models of cases of malocclusion of the teeth before and after treatment. These models represented all phases of malocclusion, and were arranged in classes and sub-classes, according to Dr. Angle's classification of malocclusion. Dr. Angle aimed to prove by them three points:

1. That normal or ideal occlusion was to be sought for in every case.

2. That the full complement of teeth is always necessary for the best results, and that when mutilation has for any reason occurred, the missing tooth or teeth must be artificially substituted.

3. That one appliance, the expansion arch, will accomplish all required movements more easily, more quickly, and better than any other number of appliances.

The results shown after the treatment of these cases were excellent and convincing, and awakened much interest.

Dr. Angle was assisted in his clinic by Dr. Lloyd S. Lourie, of Chicago, and Dr. Milton T. Watson, of Detroit, Mich.

## ASEPTIC ABSORBENT POINTS.

### DR. HENRY W. GILLETT, NEW YORK.

A bibulous paper point fine enough and stiff enough to follow fine pulp canals, sterilized, and packed in such a manner as to permit of a few at a time being taken from the package without danger of infecting the remainder. A time-saver, very useful in removing any fluid from pulp canals, and performing this office in such a manner as to avoid the bacterial infection of the canal which so commonly accompanies the use of a cotton-wound broach for this purpose. Also useful in applying dressings in pulp canals, originally suggested many years ago by Dr. J. F. P. Hodson. Manufactured by Johnson and Johnson.

## GOLD FILLING.

### DR. MARVIN L. HANAFORD, ROCKFORD, ILL.

This clinic consisted of the insertion of a good filling in a mesio-occlusal cavity in a first left upper molar, and was designed to illustrate a conservative application of the principle of extension for prevention.

The patient being considered immune to caries, the gingival margin of the cavity was extended only to reach sound tissue; the lingual well was cut sufficiently to be clear of contact with adjoining tooth; buccal wall, being thin, was cut away to allow for a considerable thickness of gold being built over it. All margins were beveled and floor of cavity made everywhere flat; general shape retentive. A matrix of thin steel was applied, ligated with silk, and further secured by packing of temporary stopping. Filling was begun with large pellets of non-cohesive gold and completed with loose-rolled cylinders, annealed with Kerr's electric annealer, condensed by means of rapid blows of hand mallet; space for finishing was gained by Ivory separator. Contact point was perfectly restored and filling throughout seemed to be satisfactory.

A point of minor importance which seemed to be of particular interest to some was the retention of the rubber dam by means of two beads, slipped onto the ligature, tied with a single knot, and so arranged that, when passed around the tooth, one bead should appear on the buccal and one on the lingual surface, securely holding the dam without the use of clamp.

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## VULCANITE.

### DR. GEORGE H. WILSON, CLEVELAND, O.

This clinic consisted of three demonstrations: Vulcanite base-plate; string for festooning, and heavy tin foil for finishing.

The claims for the method are: More perfect vulcanization with a hard metallic surface finish. The base-plate being of black or uncolored rubber, there is little danger of mercurial poisoning. Having a metallic surface finish, it is more easily kept clean. It reproduces the rugæ of the mouth, which nature designed to assist deglutition and enunciation. The method in every way meets the requirements of mechanics and æsthetics.

A full description and illustration of the method were published in the March, 1903, number of THE DENTAL SUMMARY.

## PINLESS TEETH FOR BRIDGE- AND CROWN-WORK.

### DR. M'FERRAN CROW, VERSAILLES, KY.

This author showed a method of using pinless rubber teeth for bridge and crown dummies. After selecting the teeth to suit the case, he makes cups of 22-k gold plate or pure gold, 30-guage, by burnishing the piece of gold to the under surface of the tooth; and then turns up the gold against the lingual and buccal surfaces. Now, with a small pair of shears he cuts the gold along the angle of the fold at each corner, burnishes the sides of the tooth, laps the corners, and with a sand-paper disk in the engine trims off all surplus gold and solders the corners. With the tooth in place in the cup, he punches through the gold into the hole underneath, inserts a post of gold wire or other suitable metal and catches it with solder. The tooth is now ready for setting up and waxing to the abutments. He removes the porcelains before investing to solder; and sets them in the cups with cement or gutta-percha, when the bridge is ready to place in the mouth.

## HOW TO MAKE GOLD CROWNS.

### DR. OLIVER MARTIN, OTTAWA, CANADA.

Prepare tooth or root in the usual way. Take measure with wire, cut band, one-sixty-fourth of an inch longer than the measure; bevel edges, lap, apply borax solution, and sweat together in Bunsen flame; try on root, cut to fit gum margin, contour with pliers, try on again, and observe articulation; trim top of band to allow free occlusion of the teeth with band in position on root. also lateral motion of jaw. Next heat over flame a piece of impression compound, place in top of band and have patient bite, holding teeth together half a minute till hard; remove band with the compound in it, carve up for cusps, leaving articulating surface, as shown on compound; pour some plaster on a glass and place crown band with compound top into it; when hard, remove. A small taper ferrule is now driven over the impression in the plaster and fusible metal poured in; take die thus obtained, and strike up top for crown on piece of lead; fit this over the crown band with compound still in it; trim, and mark with a file edge of both top and band; now remove compound from band; clean both top and band in acid; put top on, having marks together; use twisted wire around tweezers, which holds them together, solder from inside with Bunsen flame, filling cusps at the same time; polish and cement on. Articulation is perfect. This can be made and cemented on in one hour.

## PORCELAIN INLAY.

### DR. J. S. M'CURDY, FORT WAYNE, IND.

Dr. McCurdy demonstrated a method of making inlays for cavities difficult of access. He prepares the cavity cup-shaped, with well-defined edges. He vaselines the tooth and cavity, and takes an impression with pink sheet gutta-percha. He fills the impression with amalgam, and, when thoroughly hard, swages the platinum foil, one one-thousandth of an inch in thickness, over the amalgam die, forming an accurate-fitting matrix in which to bake the porcelain inlay.

## PRESERVATION OF INTERPROXIMATE SPACES.

### DR. J. L. SWEETNAM, MANISTEE, MICH.

This clinic consisted of a demonstration by models of a method emphasizing the importance of preserving the interproximal spaces. For gold crowns two bands are used, the first, a narrow one, is driven under the free margin of the gum, an impression is then taken with plaster, the band removed and placed in proper position in the impression, and a model run with Melotte's metal. The case is then put into an articulator, and the second band fitted snugly over the first one. Now, with the use of a burnisher, from the inside the bands are forced against the adjoining teeth, where the point of contact is desired. The cusps having been struck up, are now filled to make the proper occlusion; the case is then removed from the articulator, and the model fused out of the bands. The bands are then soldered together, and the cusps wired to place and soldered. In this way a beautifully contoured crown is produced, and an absolute fit to the root is insured. It is not claimed to be an easy or quick method; but if beauty of outline and accuracy of fit are desired, the extra time required to do such work is fully compensated for. The same result is more easily obtained with porcelain crowns by using rubber plate teeth instead of facings.

## APPLICATION OF PORCELAIN IN DENTAL PROSTHESIS.

### DR. D. O. M. LE CRON, ST. LOUIS, MO.

Dr. Le Cron gave a complete exhibit of cases from full dentures, bridges, crowns and inlays; also of high fusing bodies used in construction throughout. Special features of the exhibit were fused samples of all high and low fusing bodies now in use, showing their comparative degrees of shrinkage, and the exact degree of temperature required for fusing each. He also demonstrated a method of mixing the gum enamel bodies, enabling the matching of various shades of mucous membranes; also a method of repairing Richmond facings broken in bridges and crowns, by burnishing 1-100 platinum in space, drilling parallel holes in backing, adjusting pins through platinum, removing same, selecting proper shade of bodies, carving to shape, fusing in furnace, putting on platinum matrix, cementing to place, resulting in a proper fitting facing.

## ADVANTAGES OF THE DICKINSON MATRIX RETAINER IN CONTOUR FILLINGS.

DR. EUGENE R. WARNER, DENVER, COLO.

The retainer by means of its plough-shaped beaks acts as a wedge between teeth, causing a slight immediate separation and at the same time holds firmly in position a thin, smooth matrix of steel, copper, or other material. The matrix can be withdrawn laterally without fracture of filling, especially in amalgam. The thorough condensation of either gold or amalgam against the walls of the matrix increases the wedging, so that the completed cases give not only a finished surface, but also a strong contact with the adjoining tooth, a point so often overlooked in the protection of the interproximal space.

## USE OF THE LOGAN CROWN IN PROSTHETIC WORK.

DR. F. R. M'CLANAHAN AND DR. F. M. SPARKS, RUSHVILLE, IND.

An upper denture of Logan crowns on gold was exhibited and received many favorable comments. The method of procedure was quite simple: A gold plate is swaged in the usual manner, and by placing it in the mouth with a few plain teeth waxed in place, the length and width of the Logan crown are ascertained; the pins are now cut from the crowns, and the countersunk portion partially ground away. Over the stub of the pin remaining in the crown burnish a piece of pure gold, about 32-gauge, and grind the remaining portion of the pin down to the gold backing. Articulate the teeth, grinding the occlusal or crown surfaces, when necessary. The crowns are now firmly waxed in place, and the case invested. The investment should be rather heavy, to prevent warpage of plate. The solder should be placed between each crown and the plate, upon the lingual surface; the case carefully heated up and soldered. Finish by using pink rubber for the gum.

## OPERATING FOR THE REMOVAL OF AN IMPACTED THIRD MOLAR.

DR. G. LENOX CURTIS, NEW YORK.

"The necessity for its removal and the danger attending should be considered.

"First study the disturbing influence upon the proximating tooth and the adjacent parts. Most prominent among these influences is the decay of the distal surface of the second molar, due to impacted debris, and inability of the patient to keep its surface clean. This condition may so irritate the soft tissue as to produce inflammatory action sufficient to bring about disease of the alveolar process, which may extend in almost any degree to the adjacent parts. We, no doubt, have all seen extreme examples of this, i. e., where a greater part of the jaw was involved and was sacrificed, when the tonsil, pharynx, parotid, and submaxillary glands were involved and the jaws locked, or where blood poisoning and even death of the patients were the results.

"Other examples are, when the tooth is incompletely erupted and gives rise to frequent inflammation of the gum by reason of the occluding tooth impinging upon the gum, the decay of the tooth itself, which cannot be filled by reason of the inaccessibility of the cavity, and the suffering due to pulpitis and reflected disturbance. These are among the reasons why malpositioned teeth should be removed. The dangers attending their removal are not great. The principal danger is paralysis due to the injury of the nerves of the jaw and tongue.

"The cicatrix caused by the operation may also be responsible for this annoying malady. This condition, however, is usually temporary and is gone by the time, or soon after, healing is complete. It may last indefinitely, but rarely to a troublesome extent, and depends largely on the general health of the patient. When the vitality is low this condition is likely to manifest itself and become annoying, as small bills do which have accumulated when one's bank account is strained. Preventive medicine is here, as in general disease, the proper treatment. There are more things to be considered than merely getting the tooth out; each case must be treated by itself and according to the conditions present. No set of rules can be applied to all cases. The operator must take into consideration whether the deranged tooth can be made serviceable. It may be found that the second molar is so badly diseased that its removal will allow the third molar to erupt and be utilized to the benefit of the patient. It was an old custom, and one which I regret to say is now sometimes resorted to, to remove the second molar so as to allow direct access for the removal of the impacted tooth.

"The method employed for the operation depends upon the position in which the tooth lies. It is said to be usually found external to the line of the jaw. I have found these teeth lying immediately external to the tonsil, at the neck of the condyloid process, external to the maxillary tuberosity, within the antrum of Highmore and in various portions of the ramus. I have never found them completely inverted with the masticating surface resting squarely over the inferior dental canal. These, however, are among the exceptions, and I cite them merely to show how carefully one should look for the cause of disease in these parts when the third molar is missing. In this work, as well as in all your undertakings, it is better to be conservative. This operation requires as much good judgment and skill as is necessary in an antrum or mastoid operation, and much more than in the amputation of a limb. No one should be better qualified to do this work than a dentist. With his knowledge of the mouth, and his dexterity in working within it, he should be able to convert what is often made a major operation into a minor one.

"In removing these teeth I usually incise the soft tissue which covers the tooth or in any way tends to retard its removal. To do this I prefer to use a pair of sharp scissors, which crushes the vessels together and causes less bleeding than the knife. The use of the scissors lessens the danger of sepsis, by preventing the pus or clots being carried into the vessels. I next remove with suitable burs and dental engine the bone which holds down the tooth. Here the greatest care must be observed, lest the soft tissues on the lingual surface be disturbed, as paralysis of the tongue is liable to follow such a wound. I aim to keep within the periosteum, except that portion which is removed with the bone lying over the tooth. When this is accomplished, removing the tooth is the next step and is by no means the easiest part of this perplexing operation. The Physick forceps and the elevator are generally employed. In most cases I find the elevator better adapted. When the Physick forceps are used the second molar must form a fulcrum upon which to pry the tooth. When the elevator is used a depression is drilled into the bone under the front portion of the tooth at a proper angle so that when it is forced under the tooth it can better be raised from its bed. When the bone about the tooth is necrosed or carious, it should be burred or curetted away, and when the wound is cleansed of the debris is should be tightly packed with antiseptic gauze, not alone for the purpose of preventing sepsis but for checking hemorrhage. This packing may be removed on the following day. Thereafter the wound should be lightly packed so as to preserve cleanliness and facilitate granulation, until the cavity in the jaw is filled and the wound healed. It must be borne in mind that when a wound is tightly packed granulations will no more form than will grass grow under the pressure of a board.

"In this patient the tooth lay parallel with the jaw, butting directly against the roots of the second molar. This man has suffered in consequence of the inflammation caused by necrosis of the bone around the tooth. As you see, the face is swollen and the patient is unable to open the mouth sufficiently to masticate his food properly."

Dr. Curtis then incised the gum, drilled away the bone and removed the tooth and dead bone as described above. The patient returned the following day for the dressing of the wound, at which time a lighter dressing was put in.

Dr. Curtis also operated for disease of the antrum of Highmore.

"This is too complicated a subject to more than touch upon at this time. The pathological anatomy alone would occupy the entire time allotted to me for this clinic. The diagnosis of the case before me has already been made and it has been under treatment for several months. One of the best methods to determine the existence and extent of disease in this cavity is to place a small electric lamp within the mouth. If the antrum is diseased it fails to transmit the lamp's rays through the jaw. In order to secure transillumination sufficient to give the face a 'Jack 'o the Lantern' appearance the room should be darkened. This, as at the present time, is not always feasible, so we will throw over the head of the patient and the one who examines the case a black rubber blanket or a coat, so as to exclude all sunlight. By this means we do little more than outline the area of malcirculation and prove the existence of disease. To ascertain the nature and extent of the disease the antrum must be opened into. The examination of this case reveals but little disease, yet enough to explain why the treatment so long continued failed to effect a cure. In the anterior portion we find a few mucous cysts which alone are probably insufficient to maintain this trouble, but immediately over the third molar the periosteum is denuded and possibly is pus-bearing. Another and perhaps the principal reason for the failure is the fact that the opening into the antrum was made at the most dependent part, i. e., through the socket of a tooth. By the constant downwrad drainage of the mucous the ciliary epithelium which lines the antrum has become matted and its action paralyzed.

"During the irritating stage of the treatment the quantity of mucous is increased. This not only causes a dull and full feeling in the antrum, but becomes infected and maintains a purulent condition. To obviate all this, I found (about 18 years ago) that by entering the antrum through an opening made at the base of the molar and by packing the antrum with gauze, after the disease was curetted away, healing was greatly facilitated. The gauze absorbs the moisture, and when granulation is complete the epithelium will be found healthy enough to perform its function. The time required for this depends somewhat upon the character and extent of the disease, but particularly upon the physical condition of the patient. Usually from two to eight weeks are required. The dressing may be repeated two or three times a week, and when the membrane is formed the wound may be gently douched, daily or twice daily, with some antiseptic solution. I prefer electrozone, a teaspoonful to a glass of warm water. Gradually lessen the number of treatments as the mucous membrane strengthens. I usually find that by the time the wound in the jaw is closed the membrane has sufficiently recovered itself to require no further assistance. The first gauze dressing should be tightly packed, for the two-fold purpose of preventing a second hemorrhage and for its stimulating effect upon the mucous membrane. In case there is little bleeding upon its removal I have found that if the antrum is filled with aristol it forms a good support for the newly forming blood vessels and that they are held close to the walls while the work of reproducing the membrane goes on. This method greatly facilitates rapid granulation and healing. On account of the roughness of the gauze and the tendency of the vessels to form into it, these delicate vessels are torn and their formation retarded.

"The aristol may be removed in one or two weeks, but it may be found necessary to repeat it. As soon as the denuded surface is covered (which fact can easily be detected by a large probe in well-tutored fingers), douching may be established. For this I prefer the Moffatt syringe. Great care must be exercised here lest the force of the solution breaks down the vessels, and for the same reason frequent examinations should be avoided. When bleeding follows the examination extra precaution should be taken by more frequent douching so as to prevent the formation of pus. Like in this case before us too much treatment is often given. The mucus is often mistaken for pus and the case hangs on indefinitely. Should pus appear inject a few drops of tincture of iodine into the antrum, trying to cover the entire surface. After douching the wound force all the solution out before dismissing the patient. This may be accomplished by a blast of air. The Moffat syringe can be used for this purpose. To facilitate drainage have the patient lean forward. A drainage tube in the antrum is an abomination. The gauze will be found sufficient to take up the fluid. The wound should be dressed sufficiently often to practically keep it dry.

"I find cocaine to be the most satisfactory anæsthetic. I employ this in most of my operations. Less time is occupied and the patient is not only in control of himself but is ready to leave the operating room and care for himself as soon as the operation is over. I prefer a saturated solution of cocaine, first giving the most reliable antidote, volasem. Then I inject into the soft tissue where I intend opening the antrum a drop of cocaine, and as soon as the parts are benumbed I continue the injection until anæsthesia is complete. As soon as sufficient bone has been removed to allow the introduction of the point of the hypodermic needle, I inject several drops into the antrum. If, however, the antrum should be filled with fluid, it should first be emptied and the cavity thoroughly douched and dried. Then with the Moffat syringe flush out the cavity with cocaine, using as much as a drachm if required. In from two to four minutes the parts are usually ready for a practically painless operation. This allows a completion of the work in from five to twenty minutes, depending upon the extent and nature of the disease. As you have seen, a very slight pressure of a sharp curette is required to remove the mucous cysts and but little more where the periosteum is denuded. It requires gentle scraping just to stimulate its action. The edges of the soft tissue surrounding this denuded surface should then be freshened. In these chronic cases I gently curette the entire surface of the antrum and then tightly pack it with iodoform gauze for its stimulating effect. This is followed by a healthy ciliary growth.

"In cases of simple suppurative inflammation one cleansing with dioxygen, full strength, and packing in the above manner, followed by daily douching, are usually sufficient to effect a normal condition. Dioxygen should rarely be used owing to its destructive tendency on granulations, except to cleanse the wound and check the hemorrhage at the time of operation. The use of this in after treatment is one of the prime causes of failure. I rarely ever find pus in the antrum following the operation. To reduce the swelling of the face, I recommend ice bags, applied frequently enough to keep the side of the face cool. This treatment is also effective in lessening pain."

# SUGGESTIONS

## PREPARING ROOT CANALS FOR FILLING.

**J. W. Daniels, Monon, Ind.**

The root canals are cleansed and dried in the usual way. Before filling with chloro-percha and gutta-percha points, tinc. aconite is pumped into the canals by means of a broach wrapped with cotton, after which the surplus aconite is removed from the pulp chamber with a pellet of cotton. The canals can now be filled with chloro-percha and gutta-percha cones in the ordinary way and no soreness will result. The action of the tinc. aconite on the tissue in the apical region prevents inflammation. I have not had an instance of patients complaining of soreness of the tooth since I adopted this method.—*Review.*

## AN IDEAL AMALGAM FILLING.

**E. R. Batty, Alma, Neb.**

Adjust the rubber dam to the tooth which is to be operated upon. Open into the cavity and remove all decay, care being taken not to cut away any more enamel than is necessary to allow proper access and to prevent the recurrence of decay. Prepare the margins in a symmetrical form and polish as smooth as possible. Sterilize the cavity with a good germicide and dry well with hot air. Cleanse with chloroform to remove any oily or foreign substance and dry again with hot air. The cavity is now ready to be filled. Line with cement to the inside margin of the enamel and place a coating of amalgam over it before the cement has set. When the cement has become sufficiently hard proceed with the completion of the filling, using the amalgam with as little mercury as possible and malleting well. By this method we have a perfectly sealed cavity where decay will not recur. The dentine is protected from thermal changes and the walls will not turn dark. We also have better retention and a stronger tooth.—*Review.*

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## CROWNING A BADLY DECAYED ROOT.

**F. J. Blight, Liverpool, Eng.**

Some time ago I was asked by a patient if I would crown an upper central incisor, which had been filled some years back with a very large gold filling, and which had unfortunately given way. On examination I found that the decay had spread largely into the root, involving considerably the pulp canal; after carefully excavating all decay and *debris,* nothing remained but little more than a shell of the original root. My patient still desired me to crown because of his dislike to a denture.

Well, gentlemen, to be brief: (1) I took a piece of platinum foil, of about the thickness of No. 1, and rolled it into the shape of a cone. This I placed into the root and packed the foil gently against the sides with cotton wool (amadou may be used) and so obtained an exact shape or impression of the root. (2) I removed the cotton wool and filled in the hollow cone with wax (whilst still in the root). (3) I then invested this in sand and plaster and filled in with scrap gold, and when the cone was almost filled I placed a small platinum pin in for manipulation. (4) The now solid cone was placed into the root, and a piece of platinum foil No. 2 was carefully burnished over the edges of the root for a base plate and soldered, and proceeded as with an ordinary pivot.

The building up of a post for a root (as above described) is to my mind an improvement over the older methods, viz., either undercutting and packing in with amalgam, or narrowing the root canal by cementing in a tube taken from a broken tube tooth.

If pin wire be introduced into the solid cone, a tube tooth may very easily be let down; or if pure gold be used throughout in soldering, a tooth may be fused with either Ash's or Jenkins' body.—*Extract Jour. B. D. A.*

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## PURIFYING AND PRESERVING SHEET WAX.

**W. A. Brownlee.**

A good formula for sheet wax is one pound of beeswax and half a pound of paraffin, melted together, and thoroughly mixed. To renovate the wax after it has been used, put three quarts of water in a pot, heat to the boiling point; add to it one ounce of oxalic acid and immediately throw in the waste wax. After it is melted allow it to boil for five or ten minutes, then set it in a place where it will cool slowly. When it is hard, the impurities can be scraped from the under surface. It is then ready to be made into sheets. To prevent the wax from being discolored by overheating, it should be melted in a double boiler. Make three or four receiving trays of common tin-plate, such as tin-smiths use, about seven inches square, with a raised edge about one-quarter of an inch high; amalgamate the surface of these trays with mercury to prevent the wax from sticking to them. Set the trays on a level surface and pour the melted wax into them quickly. With a little experience the sheets can be made just the proper thickness for use. When the wax becomes set, chill it in cold water and it is easily removed from the trays. Cut each sheet into four parts, and each part will wax up one model.—*Dominion Journal.*

# SOCIETY

## OHIO STATE DENTAL SOCIETY.

The following is but a partial program for the coming meeting of the Ohio State Dental Society, to be held in Columbus, Ohio, December 1st, 2d and 3d, 1903, but is as complete as could be made up to the time of going to press of The Summary. Additional papers and clinics will be included in the official program issued later:

### PAPERS.

President's Address, J. B. Beauman, D. D. S., Columbus.

Esthetic Dentistry Required, W. T. McLean, M. D., D. D. S., Cincinnati.

Higher Fees and How to Command Them, W. C. Ebersole, D. D. S., Cleveland.

Suggestions in Dental Records, Bookkeeping and Nomenclature, H. T. Smith, D. D. S., Cincinnati.

The Doctor Analyzed, J. W. Clemmer, M. D., Columbus.

Our Code of Ethics, Carol McElroy, D. D. S., Delaware.

A Comparison of Jenkins' Porcelain with the High-fusing Porcelain, J. Q. Byram, D. D. S., Indianapolis, Ind.

The Province of Porcelain Work in Dentistry, Hart J. Goslee, D. D. S., Chicago, Ill.

Management of Inlay Matrix, L. E. Custer, D. D. S., Dayton.

Enamel Walls and Margins, L. P. Bethel, M. D., D. D. S., Columbus.

A Few Cardinal Points in Orthodontia, F. M. Casto, M. D., D. D. S., Columbus.

### CLINICS.

A New Method of Setting Logan Crown with Band, W. I. Jones, Nelsonville, O.

The Use of 24k. Gold in Crown- and Bridge-Work, J. L. Zell, Dayton, O.

Support for Incisor Gold Fillings, Richard A. Suhr, Cleveland, O.

Vulcanite, George H. Wilson, Cleveland, O.

Country Dentists' Makeshifts, L. W. Ballard, Alliance, O.

Porcelain Inlays, Henry C. Raymond, Detroit, Mich.

Construction of Porcelain Crowns and Bridges, Hart J. Goslee, Chicago, Ills.

Nasal Inhaler for Nitrous Oxide, C. K. Teter, Upper Sandusky, O.

Steele Interchangeable Teeth, C. L. Frame, Columbus, O.

Demonstrating the Management of Inlay Matrix, L. E. Custer, Dayton, O.

Demonstration of Local Anesthetic, L. O. Green. Chicago, Ills.

A Splint for Retaining Loose Teeth, W. H. Todd, Columbus, O.

Cataphoresis, W. T. Jackman, Cleveland, O.

A Method to Prevent Recurrent Sepsis in Root Canals, David E. Sheehan, Cincinnati, O.

The Jenkins' Porcelain Enamel, J. Q. Byram, Indianapolis, Ind.

Gold Filling with Solila Gold, A. O. Ross, Columbus, O.

Davis Crown Bridge, A. S. Condit, Mt. Vernon, O.

Partial Restoration of Incisor; Using Electric Mallet and Platinum and Gold Foil, J. B. Snyder, Bryan, O.

Orthodontia Models and Appliances, F. M. Casto, Columbus, O.

## INSTITUTE OF DENTAL PEDAGOGICS.

Program of the meeting to be held in Buffalo, December 28th, 29th, 30th, at the Iroquois Hotel. All interested in the education and the elevation of the standards of the dental colleges and students are very earnestly requested to be present at this meeting.

1. President's address. Some Faults of the Prevailing Dental Training, Dr. J. D. Patterson, Kansas City. Discussion to be opened by Dr. John I. Hart, New York; Dr. B. Holly Smith, Baltimore; Dr. H. P. Carlton, San Francisco; Dr. George E, Hunt, Indianapolis.

2. Prosthesis. Two papers. 1st—Methods of Teaching the Artistic Eelements of Prosthetic Dentistry, Dr. A. O. Hunt, Omaha, Neb. 2d—Methods of Teaching the Anatomical Arrangement of Teeth, Dr. B. J. Cigrand, Chicago. Discussion to be opened by Dr. N. S. Hoff, Ann Arbor; Dr. G. H. Wilson, Cleveland; Dr. R. R. Freeman, Nashville; Dr. F. H. Berry, Milwaukee.

3. An Ideal in Pathology. Paper by Dr. D. R. Stubblefield, Nashville. Discussion to be opened by Dr. H. A. Smith, Cincinnati; Dr. T. B. Hartzell, Minneapolis; Dr. A. H. Peck, Chicago; Dr. O. L. Hertig, Pittsburg.

4. Orthodontia Technology. Two Papers. Dr. S. H. Guilford, Philadelphia; Dr. C. S. Case, Chicago. Discussion will be opened by Dr. W. E. Grant, Louisville; Dr. A. E. Webster, Toronto; Dr. H. A. Pullen, Buffalo; Dr. H. T. Smith, Cincinnati.

5. The Value of Instruction in Dental History and Literature. Paper by Dr. J. Taft. Discussion opened by Dr. H. L. Ambler, Cleveland; Dr. Charles McManus, Hartford; Dr. J. H. Kennerly, St. Louis; Dr. B. J. Cigrand, Chicago.

6. Porcelain Technology. Paper by Dr. H. J. Goslee. Discussion

to be opened by Dr. J. Q. Byram, Indianapolis; Dr. Ambler Tees, Philadelphia; Dr. L. E. Custer, Dayton; Dr. H. L. Banshaf, Milwaukee; Dr. J. F. Ross, Toronto.

7. The Dental Curriculum. Paper by Dr. George E. Hunt, Indianapolis. Discussion to be opened by Dr. G. V. Black, Chicago; Dr. J. B. Willmott, Toronto.

8. How Shall Quizzes Be Conducted? Symposium by Dr. F. D. Weisse, New York; Dr. R. H. Nones, Philadelphia; Dr. L. P. Bethel, Columbus.

9. Exhibition of recent teaching appliances. Dr. W. G. Foster, promises to be most interesting.

W. H. Whitslar,
*Chairman Executive Committee.*

## COLORADO STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Colorado State Board of Dental Examiners will be held at the Capitol in Denver, beginning Tuesday, December 1st, 1903.

All applications for examination must be filed with the Secretary before that date. Examinations are theoretical and practical and applicants must be prepared to do such practical work as required.

For further particulars, address,

M. S. Fraser, *Secretary,*
Denver, Colo.

## A CORRECTION.

The meeting of the American Society of Orthodontists will begin on Thursday, December 31st, 1903, instead of Wednesday, December 30th, as previously published.

The meeting will be held at the Iroquois Hotel, Buffalo, N. Y., and promises to be most iteresting.

Anna Hopkins, *Secretary.*

## UNIVERSAL EXPOSITION, ST. LOUIS, 1904.

The Fourth International Dental Congress will be held at St. Louis, August 29 to September 3, 1904. The Committee of Organization is as follows: H. J. Burkhart, Chairman; E. C. Kirk, Secretary; R. H. Hofheinz, J. W. David, Wm. Carr, Wm. Crenshaw, W. E. Boardman, Don M. Gallie, V. E. Turner, G. V. I. Brown, J. Y. Crawford, A. H. Peck, M. F. Finley, J. D. Patterson and B. L. Thorpe.

The Department of Congresses of the Universal Exposition, St. Louis, 1904, has nominated the Committee of Organization of the Fourth International Dental Congress—to be held in August, 1904, in connection with the exposition—which was appointed by the National Dental Association, and has instructed the committee thus appointed to proceed with the work of organization of said Congress.

Pursuant to the instructions of the Director of Congresses of the Universal Exposition, 1904, the Committee of Organization presents for your consideration and information the subjoined outline of the plan of organization of the Dental Congress.

The Congress will be divided into two departments: Department A—Science (divided into four sections). Department B—Applied Science (divided into six sections).

### DEPARTMENT A—SCIENCE.

I. Anatomy, Physiology, Histology and Microscopy. Chairman, M. H. Cryer.

II. Etiology, Pathology and Bacteriology. Chairman, R. H. Hofheinz.

III. Chemistry and Metallurgy. Chairman, J. D. Hodgen.

IV. Hygiene, Prophylaxis, Therapeutics, Materia Medica and Electro-therapeutics. Chairman, A. H. Peck.

### DEPARTMENT B—APPLIED SCIENCE.

V. Oral Surgery. Chairman, G. V. I. Brown.

VI. Orthodontia. Chairman, E. H. Angle.

VII. Operative Dentistry. Chairman, C. N. Johnson.

VIII. Prosthesis. Chairman, C. R. Turner.

IX. Education. Nomenclature, Literature and History. Chairman, T. W. Brophy.

X. Legislation. Chairman, Wm. Carr.

### COMMITTEES.

The following committees were appointed:

Finance. Chairman, C. S. Butler.

Program. Chairman, A. H. Peck.

Exhibits. Chairman, D. M. Gallie.

Transportation. (To be appointed).

Reception. Chairman, B. Holly Smith.

Registration. Chairman, B. L. Thorpe.

Printing and Publication. Chairman, W. E. Boardman.

Conference with State and Local Dental Societies. Chairman, J. A. Libbey.

Dental Legislation. Chairman, Wm. Carr.

Auditing. (Committee of Organization).

Invitation. Chairman, L. G. Noel.

Membership. Chairman, J. D. Patterson.

Educational Methods. Chairman, T. W. Brophy.

Oral Surgery. Chairman, G. V. I. Brown.

Prosthetic Dentistry. Chairman, C. R. Turner.

Local Committee of Arrangements. (To be appointed.)

Essays. (To be appointed.)

History of Dentistry. Chairman, Wm. H. Trueman.

Nomenclature. Chairman, S. W. Foster.

Promotion of Appointment of Dental Surgeons in the Armies and Navies of the World. Chairman, Wms. Donnally.

Care of the Teeth of the Poor. Chairman, Thomas Fillebrown.

Etiology, Pathology, and Bacteriology. Chairman, R. H. Hofheinz.

Prize Essays. Chairman, James Truman.

Oral Hygiene, Prophylaxis, Materia Medica, Therapeutics, and Electro-therapeutics. Chairman, A. H. Peck.

Operative Dentistry. Chairman, C. N. Johnson.

Resolutions. Chairman, J. Y. Crawford.

Clinics. Chairman, C. E. Bentley.

Nominations. (To be appointed.)

*Ad interim.* Chairman, G. V. I. Brown.

The officers of the Congress, president, vice-president, secretary and treasurer, will be elected by the Congress at large at the time of the meeting, and will be nominated for the several positions by the nominating committee.

The Fourth International Dental Congress, which will be held August 29 to September 3 inclusive, 1904, will be representative of the existing status of dentistry throughout the world. It is intended further that the Congress shall set forth the history and material progress of dentistry from its crude beginnings through its several developmental stages, up to its present condition as a scientific profession.

The International Dental Congress is but one of the large number of Congresses to be held during the period of the Louisiana Purchase Exposition, and these in their entirety are intended to exhibit the intellectual progress of the world, as the Exposition will set forth the material progress which has taken place since the Columbian Exposition in 1893.

It is important that each member of the dental profession in America regard this effort to hold an International Dental Congress as a matter in which he has an individual interest, and one which he is under obligation to personally help toward a successful issue. The dental profession of America has not only its own professional record to maintain with a just pride, but, as it is called upon to act the part of host in a gathering of our colleagues from all parts of the world, it has to sustain the reputation of American hospitality as well.

The committee of organization appeals earnestly to each member of the profession to do his part in making the Congress a success. Later bulletins will be issued setting forth the personnel of the organization and other particulars, when the details have been more fully arranged.

H. J. Burkhart, *Chairman,*
E. C. Kirk, *Secretary.*

*Approved*:
Howard J. Rogers,
*Director of Congresses.*
David R. Francis,
*President of the Exposition.*

## BOARD OF DENTAL EXAMINERS OF PENNSYLVANIA.

Examinations will be conducted by the Board of Dental Examiners simultaneously in Philadelphia and Pittsburg, December 15th to 18th, 1903.

For application papers or any information, address

HON. ISAAC B. BROWN,
*Secretary Dental Council,*
Harrisburg, Penn.

## ENDORSEMENT OF INTERNATIONAL DENTAL CONGRESS.

WHEREAS, The Fourth International Dental Congress, which is to meet in St. Louis, August 29, September 3, 1904, under the auspices of the Louisiana Purchase Exposition is to be the greatest event in the history of dentistry.

WHEREAS, As The Fraternal Dental Society of St. Louis, is progressive and stands for the best in dentistry and its interests,

*Be it Resolved,* That the Fraternal Dental Society of St. Louis heartily endorses the Fourth International Dental Congress, and tenders it their aid and support as a Society and as individuals.

W. L. WHIPPLE, *President, Pro. Tem.*

E. E. HAVERSTICK, *Secretary.*

Unanimously adopted, September 8, 1903.

## THE SOUTH DAKOTA BOARD OF DENTAL EXAMINERS.

The next regular semiannual meeting of the South Dakota State Board of Dental Examiners to examine applicants for license to practice in the State will be held in Vermilion, December 8, 9, 10 and 11, 1903, beginning at 8 o'clock p. m. Positively no candidates will be received for examination after the 8th.

Only those who hold diplomas from reputable dental colleges, and those having had three years of actual practice in dentistry immediately preceding the examination are eligible to take the same.

Candidates must come prepared to do all kinds of fillings. They must also bring with them teeth and necessary utensils for doing both bridge and vulcanite work.

The examination fee is $10, and a subsequent $5 will be required if applicant is successful in passing the examination.

G. W. COLLINS, *Secretary.*

## DENTAL COMMISSIONERS OF CONNECTICUT.

The Dental Commissioners of the State of Connecticut hereby give notice that they will meet at Hartford, on Wednesday, Thursday and Friday, November 18, 19, and 20, 1903, respectively, to examine applicants for license to practice dentistry, and for the transaction of any other proper business.

The practical examination in operative and prosthetic dentistry will be held Wednesday, November 18, at 9 a. m., in Putnam Phalanx Armory, corner Haynes and Pearl streets.

The written theoretic examination will be held Thursday and Friday, November 19 and 20, at the Capitol.

All applicants should apply to the Recorder for proper blanks, and for the revised rules for conducting the examinations.

Application blanks must be carefully filled in and sworn to, and with fee, twenty-five dollars ($25.00), filed with the Recorder on or before November 10, 1903.

By direction of the Dental Commissioners.

J. Tenney Barker, *Recorder.*

Wallingford.

## OHIO STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of the State of Ohio will meet in Columbus, O., November 24, 25 and 26, at the Hotel Hartman, for examination of candidates for certificates of registration.

Application should be filed with the Secretary by November 14.

For further particulars address

H. C. Brown, *Secretary.*

185 E. State Street, Columbus.

## NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

It is earnestly requested that all the Secretaries of the Boards of Examiners throughout the States and Territories mail to the Secretary all changes in their respective Boards and greatly oblige,

Chas. A. Meeker, D. D. S., *Secretary,*
29 Fulton Street, Newark, N. J.

# AFTERMATH

## PERSONAL AND MISCELLANY.

**Dr. F. S. Manning,** dentist, died at Versailles, Mo., October 9th, of consumption.

**Located in Ohio:**—Dr. J. E. Price, of Parkersburg, W. Va., has located in Maxsburg, Ohio.

**Loss by Fire:**—The dental office of Dr. A. E. Caron, Glendorf, Ohio, was burned. No insurance.

**Loss by Fire:**—Dr. Edwin Wade, New Orleans, sustained a loss of over $500 by fire. No insurance.

**Killed by a Train:**—Dr. C. F. Little, Kewanee, Ills., was killed by a train at Galva, Ills., October 7th.

**Married:**—Dr. E. E. Schartz, of Edwardsville, Ill., was married recently to Miss Edna Donoho, of Troy.

**Shot His Wife:**—Dr. L. R. Hawley, Chicago, shot his wife, October 7th, but from last accounts she will recover.

**Dr. Slonaker Married:**—Dr. J. W. Slonaker, Chicago, was married September 23d, to Miss Anna Martin, of the same city.

**Dropped Dead:**—Dr. C. W. Hamilton, Ithaca, Mich., dropped dead while working at his dental chair. Apoplexy the cause.

**Appointed a Library Board Member:**—Dr. B. J. Cigrand, Chicago, has been appointed a member of the Chicago library board.

**Seventy-three Failed** out of a class of 262 applicants examined at the recent meeting or the Pennsylvania State Examining Board.

**Died of Cancer:**—Dr. C. M. Gill, one of the oldest dentists of Baltimore, Md., died of cancer, October 5th, at the age of sixty-eight.

**Dr. S. D. Ruggles Married:**—Dr. S. D. Ruggles, Portsmouth, Ohio, was married August 18th, to Miss Mabel A. Drew, of the same city.

**Badly Hurt by a Car:**—Dr. H. B. Neville, Atlanta, Ga., was badly cut and bruised about the head and body by being struck by a street car.

**Died Suddenly:**—Dr. Howard Edmonston, Palmyra, N. Y., died suddenly in Brooklyn as the result of an attack of malignant diphtheria.

**Prominent Dentist Dead:**—Dr. George W. Pierce, a prominent dentist of Columbus, Ga., died at the family residence in Summerville, Alabama.

**The Lincoln Odontographic Society,** recently formed, elected Dr. H. A. Shannon, president; Dr. H. F. Helms, vice-president; and M. E. Vance, secretary.

**Appointed a Member of the Examining Board:**—Dr. Thomas Cole, Newman, Ga., has been appointed a member of the examining board by Governor Terrell.

**Dentist Declared Bankrupt:**—Dr. C. N. Folse, New Orleans, La., filed a voluntary petition in bankruptcy, September 28th. Assets and liabilities not made public.

**Married:**—Dr. F. H. Wolven, Bloomfield, N. J., dental surgeon, United States army, was married recently to Miss Rosalie F. Hansbrough, Washington, D. C.

**Dead:**—Dr. Charles Houghton, one of the prominent dentists of Batavia, N. Y., and one of the oldest practitioners in western New York, died at the age of sixty-five.

**Died from Effects of Chloretone:**—Dr. E. F. Dimmick, Oakland, Cal., is reported to have died from the effects of a large dose of chloretone he administered to himself.

**Dental Surgeons Transferred:**—Dr. S. W. Hussy has been assigned to Fort Snelling for duty, and Dr. F. D. Pease has been ordered from Fort Snelling to Fort Assinniboine, Montana.

**State Board Appointments:**—Dr. Hiram Depuy, Pittsburg, and Dr. H. B. McFadden, Philadelphia, have been appointed members of the State Examining Board by Governor Pennypacker.

**Died Under an Anesthetic:**—Mrs. Lydia Seipp, Chicago, died under an anesthetic given for the purpose of tooth extraction. In his inquest the coroner exonerated the dentist from blame.

**Eight Out of Twenty-five Pass:**—Of the twenty-five applicants who took the examination at the recent meeting of the Minnesota State Dental Examining Board, only eight succeeded in passing.

**Colleges Combine:**—The Medical and Dental Departments of the National University and Columbian University, Washington, have consolidated, and the college will be known as the Columbian.

**Minnesota State Dental Society** officers are: Dr. J. M. Walls, St. Paul, president; Dr. H. B. Child, Minneapolis, vice-president; Dr. G. S. Todd, Lake City, secretary; Dr. H. M. Reed, Minneapolis, treasurer.

**Dental Board Appointments:**—The Governor of Texas has recently appointed Drs. C. C. Weaver, of Hillsboro; Merchant, of Giddings, and Westerfield, of Dallas, as members of the State Examining Board.

**President J. G. Reid:**—On account of the resignation of Dr. Burton L. Thorpe, president of the National Association of Dental Examiners, Dr. James G. Reid, Chicago, has been appointed president to succeed him.

**Dr. J. F. Siddall Retires from Practice:** After fifty years' practice, three and a half years in Michigan and forty-six and a half in Ohio, Dr. J. F. Siddall has retired from the actual practice of dentistry at Oberlin, Ohio.

**Dentist Shoots Himself:**—Dr. C. H. Marshall, aged thirty-six years, committed suicide in Toledo, Ohio, by sending a bullet through his head. Despondency over continued ill health is the supposed cause for the rash act.

**Indicted for Embezzlement:**—Mrs. Marie Layton Johnston, New York, who claims to be the wife of a Fifth avenue dentist, has been indicted for the embezzlement of $75,000 from the United States Playing Card Company.

**Dental Student Commits Suicide:**—William Norris, a student in the Northwestern Dental College, Chicago, committed suicide by turning on the gas in his room, asphyxiating himself. Ill health is the supposed cause.

**The Odontographics** met at Kansas City, Mo. Officers for the ensuing year are: President, Dr. George A. Esterly, Lawrence; vice-president, Dr. C. H. Darby, St. Joseph; secretary and treasurer, Dr. J. P. Root, Kansas City.

**Noon Closing on Saturdays:**—The Independence, Mo., dentists have agreed to close their offices at noon on Saturdays and not reopen until Monday morning. If all dentists would follow their example many would enjoy better health.

**Barnes Dental College** has recently been organized in St. Louis, Mo., with Dr. Burton L. Thorpe, dean. Among the dental members of the faculty we notice the names of Le Cron, Morrow, Bassett, Summa, Wace, Owen, Gibson. Simpson and Arthur.

**Well-Known Traveling Man Dead:**—Mr. John S. Curley, a genial and well-known traveling man in the employ of the Shafer-Pierce Co., died recently from the effects of gangrenous appendicitis. He was a man well liked in his territory and will be greatly missed by his many dental friends.

**Dentist Sent to the Pen:**—Dr. D. B. Harlan, according to a press report, was, October 8th, sentenced to the penitentiary at Canon City, Col., for a criminal assault on Mrs. Fred Baer in his office, while she was under the influence of an anesthetic administered by him prior to performing a dental operation.

**Interchange of License:**—On October 2d, the Pennsylvania State Board issued a ruling to the effect that hereafter the New York State dental license would be accepted for registration in Pennsylvania without examination, and that licenses from Pensylvania would be accepted in New York on the same terms.

**Dentist Catches a Thief:**—Dr. William Helmuth, St. Louis, Mo., found a man in his office stealing forceps and other instruments. When discovered the thief made an exit by a side door, but the wary dentist took the elevator and reached the ground floor just in time to catch the thief and turn him over to the police.

**New College Building:**—The New Orleans College of Dentistry has a new building, erected purposely for its needs. The building is a model structure and cost about $60,000. Under the reorganization of its faculty the New Orleans College has been materially strengthened and will be one of the leading institutions of the South.

**Consolidation of Well-Known Dental Colleges:**—The absorption of the Chicago College of Dental Surgery by the University of Illinois has been consummated. Truman W. Brophy, the present dean of the dental college, will be retained in that capacity. The university has purchased the building and all the college property outright.

**Hartford Dental Society Officers:**—The following are the new officers elected for the coming year: Dr. E. Eberle, president; Dr. A. W. Cowee, vice-president; A. E. Cary, secretary; Dr. E. R. Whitford, treasurer; executive committee, C. E. Barrett, F. D. Clark, C. C. Prentiss; librarian, W. A. Damon; historian, N. J. Goodwin.

**Northern Indiana Dental Society:**—Officers elected are as follows: S. B. Hartman, Ft. Wayne, president; J. A. Stockley, South Bend, vice-president; O. U. King, Huntington, secretary and treasurer; Dr. L. A. Salisbury, Crown Point, supervisor of clinics; Drs. Stage, Goshen; Wagoner, Huntington; Redmon, Peru; Strauss, Huntington, executive committee.

**Lost Last Tooth at the Age of 100 Years:**—The Neasho, Mo., Times states that Benjamin Harrison, who lives south of town, said to be the oldest man in the county, now over one hundred years, traveled ten miles Tuesday and had Dr. A. C. Schell extract the last tooth remaining in his mouth. Although bowed down with age, the old gentleman is well preserved. His eyesight is still good and he seems as active as most men at eighty.

**Knows His Failing:**—Knowing his own failing, a dentist in Quenemo, Kan., published the following card in his local paper: "I kindly ask all my patrons and friends to not bring any intoxicant to my office. While I know many wish a stimulant when having teeth extracted, I wish they would take it before coming to my office. It is a temptation that I would like to resist, and kindly warn all to refrain from bringing it to or about my office."

**Brooklyn Dentist Dead:**—Dr. Charles Edward Mensch, one of the oldest and best known dentists of Brooklyn, died after a lingering illness at the summer home of his daughters, at Atlantic Highlands, N. J. He was an old resident of Brooklyn, and had been one of the pioneers to cross the plains to Pikes Peak, when Denver consisted of but a few log cabins. He was also a veteran of the Civil War, having fought at both the battles of Bull Run and Gettysburg.

**Wisconsin State Dental Society Officers:**—At the annual meeting of the Wisconsin State Dental Society, held at Superior, Wis., July 21st to 23d, 1903, the following officers were elected: President, A. G. Fee, Superior; first vice-president, F. G. Van Stratum, Hurley; second vice-president, J. V. Miller, Manitowoc; secretary, W. H. Mueller, Madison; Treasurer, Adolph Gropper, Milwaukee. Place and time of holding next meeting, Manitowoc, third Tuesday in July, 1904.

**Died After a Visit to a Dentist:**—Mrs. Helena Dietz, Brooklyn, N. Y., died September 29th, from what was supposed to be the loss of blood from the extraction of nine teeth on Thursday night, September 24th. Mrs. Dietz, who was sixty-one years old, had been a sufferer from bronchitis for several years and had been in poor health generally, and it is thought that the shock of extracting the teeth, together with the loss of blood in her delicate health, contributed to her death.

**To Build a Dental Hospital:**—Dispatches from Berlin, Germany, state that the municipality of Strasburg has resolved to build at a cost of $8,000 a dental hospital for the exclusive use of school children. Every child must be subjected to a dental examination on entering school and twice every school year until the age of thirteen. The municipality came to the conclusion that a large proportion of the ills to which young people are heir result from bad teeth and the lack of proper dental attendance.

**Utah Dental Association's Awakening:**—At a meeting of the Utah Dental Association, held in Salt Lake City on the ninth of October, the society was awakened from its long inactivity and given a new lease of life. New officers were elected and about fifteen new members enrolled. It was decided to invite and urge all reputable practitioners to become members at once, and help to make the society at least equal to that of any other western State. At this meeting the initiation fee was reduced to three dollars, which includes the first year's dues.

**Dentist Sues Persian Ruler's Brother:**—Prince Zille Sultan, governor of the province of Ispahan, Persia, and brother of the Shah, is likely to be sued by a New York dentist for breach of contract. The dentist, Dr. Charles Wagschal's, claim is over a contract in which he is named as "dentist to his royal highness," and is promised an annual stipend of 200 toman. This is about $300 a year, and it is to recover payments from 1896 to the present time that the suit is threatened. Dr. Wagschal wandered to Teheren in 1894, and after treating the prince for ulcerated teeth, received his royal commission. Although he left the country two years later, he has filed a claim for seven years' salary with General John Tyler, United States consul at Teheren.

**New York Examiners' Decision:**—The State Board of Dental Examiners has decided that the interchange committee should not enter into arrangements for an interchange with any state which accepts licenses on the conditions prescribed by the Association of Dental Faculties. Provision has been made for an interchange agreement with any other state in the Union that meets the New York dental standard. Thorough discussion of the requirements of a combined medical and dental course has led to the opinion that where a dental school has university connections and the combined work of the first two years in medicine and dentistry are identical, if the law permits, the two degrees of M. D. and D. D. S. might be secured in five years; that in other schools the combined course should be completed in six years.

**Dental Office Thefts:**—Dr. W. C. Thomas, Alexandria, Ind., lost instruments and nearly everything of value in his office recently through burglars. Dr. A. B. Cowles, Rome, N. Y., had gold and other supplies and instruments to the amount of $150 stolen by thieves. In Utica, N. Y., thieves entered the offices of Dr. W. T. Reynolds and N. L. Merwin, taking supplies to the value of $200. Dr. Reynolds, Geneva, N. Y., was recently relieved of about $200 worth of materials by burglars. Thieves entered the office of Dr. L. H. Jones, Rome, N. Y., and made way with gold and other supplies. At Marshallville, Iowa, thieves stole about $150 worth of gold scraps and materials from Dr. D. G. Mahood. Dr. F. A. Upham, Manchester, N. H., lost $50 worth of instruments by thieves. Gloversville and Amsterdam, N. Y., dentists have recently lost, by burglary, over $300 worth of materials and instruments. Dr. D. G. Mahood, Webster City, Iowa, robbed of $125 worth of gold and filings. Dr. Willett, Peoria, Ills., was robbed of $50 worth of gold and crowns.

**Patents of Interest to Dentists, Recently Granted:—**

733807.—Frictional gearing for dental machines, Luther L. Bosworth, Cleveland, Ohio.

733410.—Rubber-dam holder, Edmund B. Marshall, Rome, Ga.

734072.—Dental clamp, Philip B. Laskey, Marblehead, Mass.

734865.—Dental crown slitter, George K. Heist, Winchester, Va.

735543.—Dentist's clamp, Victor Malizan and J. C. Prochaska, Chicago, Ills.

12143.—Reissue apparatus for swaging gold crowns, Benjamin B. Brewer and W. M. H. Burfeind, San Francisco, Cal.

735762.—Dental mouth-prop, mirror and tongue protector, William Hare, Danville, Ills.

736101.—Dental tool, Gershom B. Hough, Somerset, Pa.

735929.—Dental mixing tablet, James I. Woolverton, Trenton, N. J.

736607.—Toothbrush appliance, Charles R. Lane, Ft. Wayne, Ind.

736650.—Tooth-cleaning appliance, Jordan E. Storms, Jr., Yonkers, New York.

737287.—Dental mixing mortar, Charles P. Schultz, Pawtucket, R. I.

737616.—Dental instrument, Hardy B. Harrell, Gainesville, Tex.

738517.—Filling teeth with porcelain, Roy K. Belden, San Francisco, Cal.

738152.—Dentist's tool for crimping edges of metal crowns, Edwin Betts, Newark, N. J.

738929—Dental instrument, Andrew T. McMillin, Little Rock, Ark.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

**The Dental Summary Is the "Real Thing":—**

I think The Summary is the best dental journal published and I can't keep house without it.—Dr. R. H. Kent, Burlington, Kan.

Enclose $1.00 for The Dental Summary. I am highly pleased with its bright, well-written articles. It is all its name implies. Don't stop it in 1904; just keep it coming.—Dr. Innis B. Sigler, Sealy, Tex.

Let me offer congratulations upon the September number of The Summary. It "cleans up" a lot that is needed.—Dr. B. G. Simmons.

Enclosed find check for The Dental Summary. I appreciate it very much.—Dr. J. K. Moose, Lenoir, N. C.

The Dental Summary is O. K. Enclosed find $1.00 for subscription.—Dr. R. G. Bell, Hackneyville, Ala.

For some reason I failed to receive my journal last month. Please send me another copy, for The Summary is too good a thing to miss. —Dr. S. D. Ruggles, Portsmouth, Ohio.

Enclosed find $1.00 for The Summary. Do not fail to keep it coming, for it is a welcome visitor.—Dr. John Stark, Geneva, Ala.

# DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

## THE PREPARATION OF CAVITIES FOR INLAYS.

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

Professor of Operative Dentistry, Chicago College of Dental Surgery.

One of the chief stumbling-blocks to the greatest perfection in the use of inlays lies in the habit of thought of the average practitioner regarding the fundamentals of cavity preparation. The use of ordinary filling materials which are inserted piece by piece or in a soft mass which subsequently becomes hard has developed a system of cavity preparation with certain underlying principles which have become grounded in the minds of the profession, and it is difficult for them to take on a new point of view in the formation of cavities. This it is necessary to do if they are to obtain the best results in inlay work, and it is to this particular phase of the subject that the present paper is directed.

The first thing for the prospective inlay worker to do is to readjust his ideas regarding the detail of cavity formation. No matter what particular system of cavity preparation he has been following in the insertion of ordinary fillings he may be assured that it will not answer for inlays. A cavity properly prepared for an inlay will not hold a foil filling or an amalgam filling with rare exceptions much longer than it is being inserted. A gold or amalgam filling is held in place mechanically by reason of the cavity walls being made of such a shape that when the filling material is molded to them it cannot be lifted out without breaking either the walls or the material. An inlay is held in place by a cement substance and in view of the fact that it is inserted in one piece the cavity must be of such form that the inlay may be lifted out of the cavity and replaced at will without injuring the cavity walls or the inlay.

It will thus be seen that there is a fundamental difference in the principle involved for the two methods, and while this must of course be apparent on the surface yet its true significance does not seem to be readily grasped by the average practitioner when he essays to do inlay work after having been accustomed to inserting ordinary fillings. As has already been said it requires looking at the matter from an altogether different point of view, and unless practitioners will do this they will not get the greatest benefit from inlay work.

A few variations in the detail of cavity formation for the two methods of fillings and inlays may be pointed out and illustrated with possible profit, not as constituting all of the differences which arise in practice but merely as indicative of the distinction between the line of thought in the one instance and the other.

The first fundamental requisite for inlay work is that the cavity must ordinarily be more widely extended on the surface of the tooth than for fillings. In other words the orifice of the cavity should be well opened out. This with some cavities involves the cutting away of much sound tooth tissue but unless the operator has the courage to do this he will have little use for inlays in such cavities; for instance, as proximo-occlusal cavities in bicuspids and molars, or in fact in any cavity involving two or more surfaces.

In Fig. I is illustrated a filling in a lower molar. While this cavity in its outline does not seem altogether typical or ideal, yet there are very many cases in which decay has so extended bucco-lingually on the proximal surface as to require the width of cavity here illustrated in the gingival region without seriously undermining either the buccal or lingual cusp. In these cases the relative width of the cavity bucco-lingually in the gingival region and at the marginal ridge may be as represented—the gingival width being greater than that near the occlusal surface. This for an ordinary filling is permissible, and in fact very many cavities are so prepared in practive with good results, particularly in teeth which are so formed that there is a decided curve from the contact point on the proximal surface over to the occlusal surface, leaving a flattened or broadened marginal ridge. In such teeth to extend the cavity wider bucco-lingually at the marginal ridge than it is near the gingival region would be wholly uncalled for if a filling of gold or amalgam were to be used, but it is manifestly certain that such a procedure is necessary in the case of an inlay. (It may be said in passing that this matter of the conformation of the teeth has more to do than has generally been accredited to it with deciding between the use of fillings and inlays in certain cases). No inlay could be successfully fitted or inserted in a cavity formed as illustrated here with all of the teeth in their normal position in the arch. The only direction in which a matrix could be lifted from this cavity without warping would be proximally and this cannot be done on account of the tooth next in line.

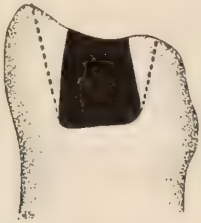

FIG. 1.

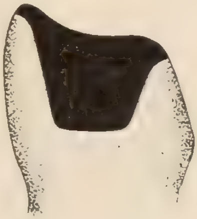

FIG. 2.

FIG. 1 represents a filling in the proximal surface of a lower molar, with dotted lines extending on either side to show where the cavity should be carried for another kind of filling mentionad in the text.

FIG. 2 shows cavity extended and the sharp tips of enamel slightly overlapped with filling material.

So if an inlay is to be used it is evident that a change in the form of the cavity outline must be made in accordance with the dotted lines in Fig. 1. This frequently involves another question which must not be overlooked. We must never leave too sharp an edge of enamel pointing occlusally in these cases where the stress of mastication is great, and in such a cavity as the one illustrated it would be necessary to slightly shorten and bevel the enamel and let the inlay lap over it and protect it as shown in Fig. 2. This applies of course more particularly to gold inlays which are better calculated than porcelain to protect the enamel and which on account of greater strength to give bulk are, to the mind of the writer, more frequently indicated for these cases than porcelain inlays.

Unless the tips of the cusps into which such a cavity frequently terminates be materially shortened there will result either one of two things, and sometimes both—the margin of the enamel will be too sharp and frail or the edge of the inlay so thin as to offer inadequate protection to the cavity margins. The operator who hesitates to cut away freely in such cases will fall short of doing the greatest good in inlay work, and the argument is all the stronger in view of the fact that such cutting is usually accomplished without pain.

Another radical difference in cavity formation for inlays and fillings relates to the interior of the cavity. With cavities prepared for the anchorage of fillings the best results are to be obtained by the creation of sharp angles between the walls in the interior parts of the cavity where the walls join each other. For instance in a cavity such as the one under consideration the axial wall should join the buccal. lingual and gingival walls at right angles. Into a cavity so formed a foil filling or one of amalgam can be built with the greatest ease and the utmost certainty of permanent retention. But for inlays these angles are clearly contraindicated. All walls must join each other on curves instead of at angles, in fact the general scheme of cavity preparation for inlays must be one of curves with no sharp angles, undercuts, or other resistance points such as are resorted to for fillings.

If the operator will bear these things in mind when he approaches inlay work he will attain a greater measure of success than he otherwise would, and while the inference is not here made that all cavities for inlays should be shallow or saucer-shaped or that depth of cavity for rentention should be ignored, yet the general plan for inlays and fillings is so diverse that the operator requires a different line of thought for the one than for the other. As has already been stated, this seems difficult to grasp for many of those who essay inlay work, but until they do they cannot hope for the greatest measure of success.

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# THE USE OF COMBINATION GOLD AND PLATINUM FOIL IN CROWN AND BRIDGE-WORK.

BY C. V. VIGNES, D. D. S., NEW ORLEANS, LA.

Professor of Prosthetic Dentistry and Metallurgy, New Orleans College of Dentistry.

For the past three or four years I have employed combination gold and platinum foil in crown and bridge-work with much success and gratification, and it is my purpose to give to the profession the method that I have used in the application of the foil and in bringing out the desired results.

In making a Richmond crown for either a central, lateral or cuspid, proceed as usual up to the point when the crown is ready for investment. After shaping and contouring with wax the mesial and distal surfaces as you would want the completed crown to be, box in, as it were, these surfaces with strips of the foil, leaving the lingual surface exposed. Then by placing a strip of the foil over the point of contact between the facing and the band—letting the strip so placed extend well over the facing and the band at the gingival border, the crown is ready for investment. Invest, boil out the wax, and you will find a metal-lined depression into which to flow the solder. When soldered and the crown is removed from the investment, it will be found to be almost ready for the mouth. The metallic surfaces favoring the flowing of the solder. Fig. 1 shows a waxed-up lateral lined with the foil and ready for investment.

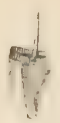


FIG. 1.

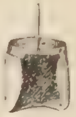


FIG. 2.

With the bicuspids and molars the mode of procedure is on the same lines. After having ground and backed the facing, adjust it in position on the band and build out in wax the body of the crown, carving the cusps to occlusion, and the mesial and distal surfaces to knuckle. Then line with foil the occlusal, mesial and distal surfaces, leaving exposed the lingual surface. Invest with the facing downward, melt out the wax and fill the matrix thus formed with solder. This will give you a solid porcelain-faced crown which will need but little polishing to make complete. In case, however, there is a short shut (close bite), line the lingual surface with the foil, and leave exposed either the mesial or distal surface, whichever is the widest, and invest with the exposed surface upward. Fig. 2 shows a bicuspid with the mesial surface exposed, ready for investment. Fig. 3 shows a bicuspid invested with a lingual exposure, ready to be soldered.

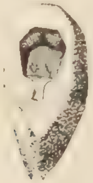


FIG. 3.

FIG. 4.

## SHELL OR BARREL CROWN.

For a shell or barrel crown: After having fitted the ferrule to the prepared tooth, soften by heat a small piece of hard wax, place it in the ferrule and have the patient to bite. Chill the wax and remove the ferrule with the wax in position, carve out the cusps, and line them with the foil, letting it extend well on the band, then invest, cusps downward. Boil out the wax and fill the cusps with solder, which will flow on the metal surface and attach itself to the end of the ferrule and give you a finished crown, absolutely correct as to occlusion and in every other respect. Fig 4 shows the crown invested and ready to be soldered.

In any place where a metallic surface is needed upon which to flow solder, this foil can be used with safety, and give as good results as a piece of swaged gold. For instance, in making a skeleton-bridge, we will say from the second bicuspid to the third molar of the lower jaw; after making the abutments, if the intervening space is filled with wax and cusps carved to occlude with the antagonizing teeth above, by placing a strip of the foil from abutment to abutment over the cusps, burnishing the foil well into the depressions, investing, boiling out the wax and soldering; flowing the solder to the thickness desired to give strength to the case, a comparatively difficult piece of work is rendered very easy. In other words, the use of this foil will make swaging unnecessary.

It is necessary, however, to use a certain degree of care in soldering, when the foil is used. The pointed flame should never be directed against the foil, as the flame would cause it to curl up; but by using a small investment, as in soldering single crowns, and heating the whole case to the fusing point of the solder used (and this method of soldering should prevail in every case, whether the foil is used or not), no changes will take place in the invested case and the solder will flow more easily and evenly.

Combination gold and platinum foil No. 60 or No. 30 can be used with equally good results. I give preference to No. 30, as I find it more pliable and easier to work.

# THE MECHANICAL SEPARATOR.

**BY GARRETT NEWKIRK, M. D., LOS ANGELES, CAL.**

Dean, and Professor of Operative Dentistry, College of Dentistry, University of Southern California.

My reasons for choosing this subject for a short paper are two: First, it is important. Second, it has been quite ignored for some years in our journalistic prints.

It a truism that free separation, plenty of room, is essential to the proper filling of proximal cavities in teeth and the restoration of natural contour.

This involves two things; first, the *obtaining* of the space, which may be by slow pressure, necessary in many cases; second, the *holding* of the space, completely and steadily during the operation. These are two distinct and equally important considerations. In many cases both can be met by the mechanical separator at one sitting, in others only the latter. There are no rules universal, not subject to exception. Neither is there an "universal" separator which can be depended on to take the place of those adapted to the different regions of the mouth. The "universal" separator is better than none, very often useful, but its principal play is to the pocketbook. It says, "get me, I will do *all* the work done by the various forms, and *save the cost*." It appeals to the general desire of mankind to get the most for the least, and something for nothing; an idea full of delusions and snares.

All the single-bow separators have this objectional feature, that one point crowds into the proximal space precisely where it is not wanted—down upon the gum, also preventing the passage of finishing strips and instruments.

The only complete representation we have of mechanical separation finds expression in the set invented by Dr. S. G. Perry, originally four in number, now six. These cost with box and wrenches $24. About $3 of this amount is for the last named. No need for the case, and any one ought to be able to make his own wrenches. The set proper, less frills, ought to be about $20.

The advantages of the Perry set are that there is something adapted to every place, carefully thought out, and most ingeniously applied. Few are cases indeed where, by reason of unusual forms or relations of the teeth, these separators will not be applicable. As to cost, I can hardly imagine a price on these instruments that would tempt me to get on without them.

Let me enumerate briefly their various spheres of usefulness.

*First:*

### EXAMINATION OF TEETH FOR DECAY.

It is not the rule, I think, that examinations are thorough enough for small cavities and incipient decay upon the proximal surfaces of the teeth near the contact points. Very frequently, owing to the width of their surfaces and their close relations, it is out of the question that an accurate examination can be made without a separation which will admit the rays of light freely to the suspected points. As a rule, I believe, the examiner is disposed to satisfy himself and his patient with the passage of a piece of silk. If this can be done without cutting or a perceptible fraying of the thread he assumes that no decay exists. And the supposition is quite as apt to be wrong as right. No examination has a right to be called complete unless the operator has inspected every danger point upon every tooth, and *knows*, not guesses, the condition of each.

In many cases this cannot be done without the application of the rubber dam and mechanical separation of the proximal surfaces. This applies to the upper teeth from the mesial line to the last intermolar space; and to the lower generally with the exception of the inter-incisal and cuspid.

Whenever there is uncertainty and question, it is easy, only the matter of a little time, to apply the dam to six or more teeth, then go from point to point with the separator, obtaining easily sufficient space for the examination needed without pain and but little discomfort to the patient. If a surface is found which needs but polishing, this may be done at once with oiled strips. If a considerable cavity is discovered a thin chisel and small bur opens it up for the insertion of gutta-percha as a further separator and temporary stopping. When the operator gets through with his series of explorations, he *knows* that he has been *thorough* and done the right thing.

*Second:*

### IN PREPARATION OF CAVITIES.

Not only is added space necessary for the insertion of fillings, but previous to that for the proper preparation of the cavity. Here the Perry separator will often give it just the room needed without previous wedging, or it will *hold* and increase the space already obtained. And it holds the teeth *steady*, so that the instrument employed, chisel, excavator or bur, can be used with greater accuracy and less pain, dread or stress on the part of the patient. This, especially in cases where the teeth are not firm, is a very important consideration.

*Third:*

### PRELIMINARY TO WEDGING AND TEMPORARY STOPPINGS.

When it is evident that sufficient space cannot be had with the mechanical separator alone, and where faults of previous operations have to be remedied, where a closed approximal space needs to be restored, the Perry separator is valuable at the beginning. It is less painful to the patient to open sufficiently for wood or gutta-percha or cotton, than to bear the teasing, gnawing, tormenting piece of a rubber band, so often inserted for that purpose.

And when cavities are opened up sufficiently for gutta-percha stoppings, which are also to act as wedges, the separators are, with me, indispensable in a large proportion of cases.

*Fourth:*

### FOR THE INSERTION OF GOLD FILLINGS.

Just as for cavity preparation, the Perry separator holds the teeth in steady position, makes the plugger more accurate and positive, while lessening the discomfort of the patient, always providing, of course, that the screw force is carefully applied and stopped at the proper point. No one is justified, ever, in making his patient really suffer by the use of a mechanical separator. It is not necessary.

In the insertion of gold fillings, the application of the instrument should be gentle at first, then slightly increased from time to time as the filling progresses, to the full extension of the contact point and final finish of the same. Then the separator may be employed as a test. Removing the force, allowing the teeth to fall together, one may judge in a few moments, by using the floss silk, whether the contour is too full, or just right. If the former, the screw is turned on again, and a little more removed with thin, fine, oiled cuttle-fish strips. The perfect point of contact cannot, as we know, *always* be determined at once. Days afterward, it may be, the discovery will be made by the patient or the operator that the floss cannot be passed at all. The separator can be placed, without the dam, and the tape again passed as before said. How much better this method than the oft-used scratching saw, or the file which invariably cuts away too much, leaving the latter condition worse than the first.

Again, with due deference to certain gentlemen, I will say, for one, that although I do myself occasionally use a matrix for gold fillings, I have just a little more confidence in those built up without it. The separator enables us to dispense with the matrix in most cases where we might be otherwise tempted to employ it.

### *Fifth:*

### PREPARATORY TO FILLING WITH AMALGAM OR CEMENT.

The separator gives the advantages before described for preparation and initial space. The teeth are held apart and steady up to the moment of applying the matrix, which should, I believe, always be employed in proximo-occlusal fillings of plastic materials. Let me deviate in passing to say that the king of all matrices for everyday use is the *Ivory;* for it fits, and demands only *one* interproximal space for itself. Like every other matrix, it requires occasionally the supplemental wedge, wood or steel, at the cervical border. When relaxed it comes out easily, "letting go" at all points but the "contact," from which it is easily worked free.

For the finishing of amalgam fillings in the contact region, which should never be done until the material is hard, the sepagold.

*Sixth:*

### SOME LITTLE POINTS TO REMEMBER.

To adjust the separator easily and deftly takes practice, and the operator must not expect smooth sailing in every case at the first. With the bicuspid and molar forms, the lip is likely to be crowded upward uncomfortably. To relieve this at once, a smooth steel instrument should be inserted at the angle of the mouth and passed gently forward, lifting the lip over.

Whenever the separating points go higher than they should, crowding uncomfortably upon the soft tissues, the screws should be relaxed, the points held in the right position, while pieces of gutta-percha are warmed and crowded under the bows. When these are hard (and the hardening may be hastened with the chip-blower), the upward movement of the points is prevented and separation proceeded with as usual.

Of course the force must be applied, not all at once, but a little at a time with periods of rest. Only tact and care are necessary. One has to be governed by the conditions present in each case; the sensations of the patient, the mobility of the teeth, and amount of space required.

The screws should be kept carefully oiled, both for ease of working and to prevent their wearing out.

Here, as in relation to all operative procedures, patients have their idiosyncrasies. One will disclaim any sense of discomfort whatever, another suffers more or fears that he will. Once a year, perhaps, a patient will present with whom the separator is impracticable, by reason of unusual sensitiveness of the peridental tissues, or nervous timidity.

Finally, much depends upon our attitude when the instrument is first used. We must tell the patient just what we wish to do and why, and what he may expect.

If we explain to the patient, old or young, the necessity of space, the advantages of the separator, often over days of slow wedging; if we assure them that we shall be careful not to carry the pressure beyond the point of reasonable endurance on their part, if we are likewise careful to consult with him or her as to the degree of pressure that may be easily borne, we shall have very little trouble in the use of this most valuable assistant, *the mechanical separator.*

Since writing the above I have had a patient presenting a case where the

### PRACTICAL APPLICATION OF THE SEPARATOR

was well demonstrated.

A lady tourist, from an eastern city, called to have me, if possible, reset a porcelain inlay in a central incisor, distal surface.

It was loose, sure enough, but prevented from falling out by the adjacent lateral, which was a Logan crown.

I said, "The inlay was certainly inserted before the crown in this case."

She replied that such was the case. At first it seemed quite impossible that the inlay could be taken out intact without injury to the cavity margin, or without removing the crown It occurred to me, however, to see what the Perry separator would do.

In a few minutes time, and with no serious discomfort to the patient, sufficient space had been obtained for the easy removal of the inlay and for its replacement in a manner which I hope will make it permanent.

Of course, one might have succeeded by the use of a wooden wedge, but certainly not with the same positiveness or satisfaction.

### NOTE.

Still later, in a conversation with Dr. G. V. Black, he called my attention to the S. S. White "Universal" which

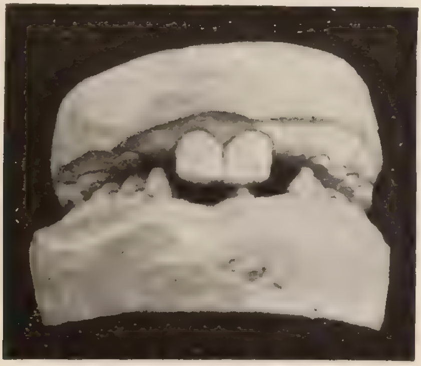
I have never tried practically. Dr. Black thinks that it *will* do the work if properly applied in nearly every instance and that it is the most free from objectionable features of any of its class. I have since examined this separator. It seems to represent an attempt and a most ingenious one to carry out the Perry principle in a single instrument. But it is necessarily expensive, larger and more complicated, and it seems to me far preferable that one should shrink his purse, or stretch his credit, just a little more, and possess the real thing; a source of daily comfort and "a joy forever."

# REGULAR CONTRIBUTIONS

## ANOMALIES OF SECOND DENTITION.*

BY J. W. HISEY, D. D. S., CLEVELAND, OHIO.

The case I present you to-day is a remarkable one, and so far as I have investigated it, is almost in a class of its own. It comes under the head of anomalies of second dentition. The case is presented with plaster casts; accompanying it is that of a boy, Master A., fourteen years and six months of age, who is minus eight permanent, and has only three deciduous teeth in the lower jaw. He has erupted in this jaw the cuspids, first bicuspids and first permanent molars. In the upper jaw we find but four permanent teeth, they are the central incisors, and first molars. We also find seven deciduous teeth; you will observe that these teeth occlude on their occlusal surfaces, and are worn off



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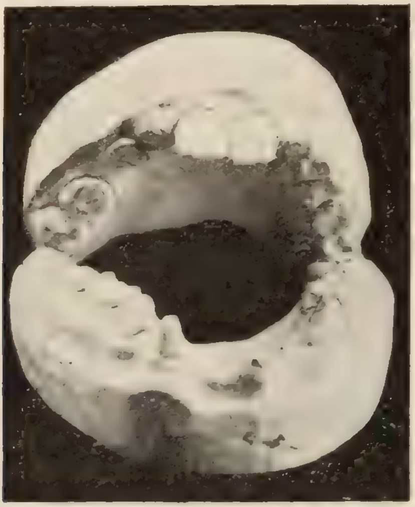
*Read before the Northern Ohio Dental Society, June, 1903.

even with the gums in some instances. Now this is due to mechanical abrasion and not due to the active formative changes in the mouth, as you must take into consideration the number of years the teeth have been used, and the way they occlude. Two of the deciduous lower incisors had to be extracted on this account, as nature had made no internal repairs in the way of secondary deposits of dentin, and as a result the pulps were exposed. You might infer that this abrasion had something to do with the delaying of the eruptions of the permanent teeth, but you will hear from this



later. Now these deciduous teeth have been almost devoid of caries, there being only two of them decayed. You see where there is one molar missing in the upper jaw; this tooth I filled with alloy and it lasted some two years. When the pulp died and the tooth became loose, I extracted it.

The other one that is decayed is a lower molar as you will see; in all the teeth that I have extracted, the roots were fully half absorbed and in some cases three-fourths. Now if there had not been absorption of the temporary roots, you might infer that this was the case of the non-eruption of the permanent teeth, but there was in all the ones I extrated, so there must have been a process set up for the removal of their roots. Yet with all these indications we find no signs of any permanent teeth, so that it must be hereditary, as it cannot be possible that this number of permanent teeth are encysted.

Now we will proceed with the family history:

### CASE NUMBER TWO.

Brother, boy nine years of age, has erupted only his permanent central incisors, and first molars in the upper jaw; balance of deciduous teeth in perfect condition; no decay. In his lower jaw we find one central incisor, the cuspids and first molars have erupted, the cuspids occupying the lateral incisors' places. The other deciduous teeth all in, and in good condition, except the one central, which is discolored and shows signs of decay. Have not done any work for this boy, did not see him until recently.

### CASE NUMBER THREE.

Brother, young man twenty-three years of age, upper jaw no bicuspid, one lateral incisor, peg-shaped, first and second molars and central incisors, also three deciduous teeth, one cuspid and two molars. Lower jaw teeth normal, with the exception of the loss of the first permanent molars by extraction.

### CASE NUMBER FOUR.

Father's teeth normal, with the exception of one peg-shaped upper lateral incisor.

Mother's and three daughters' teeth in normal condition, so that there is a peculiar characteristic in this anomaly that only the boys of the family are afflicted with, also you will see that the abrasion in the boy of fourteen years and six months had nothing to do with the delaying of the eruptions of these teeth, as you find a deciduous cuspid, and two molars remaining in the mouth of the elder brother, who is twenty-three years of age. Now no doubt exists in my mind, but that this anomaly is inherited, although the parents have no knowledge of it, as the grandparents are all dead. Now in my practice I have not made it a custom to extract deciduous teeth to hasten the eruption of the permanent, that is where the teeth are sound and solid in the jaws, but once, in the case of a young girl eleven years of age, who had not lost the deciduous lateral incisors in the upper jaw, and as there was not room enough for the permanent central incisors, I extracted the deciduous lateral incisors ,and found that the roots were perfect and not absorbed in the least, and up to the present time, five years later, the permanent laterals have not made their appearance, and the other teeth have filled the space, cuspids taking the places of the lateral incisors.

I furthermore had six sciagraphs taken of the case, which show, to my sorrow, that there are positively sixteen permanent teeth missing, and more than likely eighteen, as the second permanent molars should be erupted at this age.

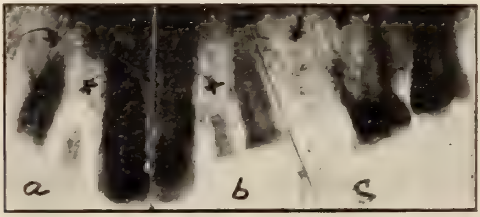


FIG. 1. UPPER JAW.

*a*—Permanent lateral and permanent cuspid missing.
*b*—Permanent lateral and permanent cuspid missing.
*c*—Both bicuspids missing.

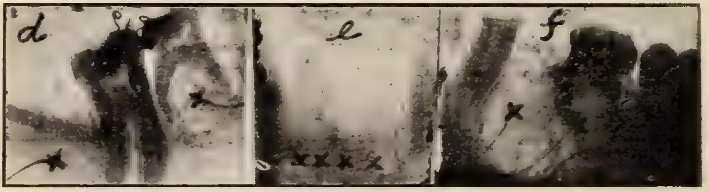


FIG. 2. LOWER JAW.

*d*—Second bicuspid and second permanent molar missing.
*e*—Central and lateral incisors missing.
*f*—Both bicuspids missing.

Now as to whether these teeth are encysted in the jaw beyond the reach of the sciagraph is beyond my knowledge.

In Burchard's Pathology we find the following: "The extreme of suppressed formation is represented in a case described by Dr. Guilford; a patient over sixty years of age had never erupted any teeth deciduous or permanent, the alveolar arches revealed no evidences of enclosed teeth, but had the appearance of typical edentulous jaws, the alveolar bone itself was primitive, the case appeared to be sporadically hereditary. A grandparent and an uncle exhibiting a like condition."

### IMPACTED AND ENCYSTED TEETH.

The extreme extent of dental malposition is reached when the permanent teeth do not erupt at all; instead of presenting in the dental arch they may be entirely embedded in the substance of the bone, either remaining there with or without pathological manifestations, or erupting in some very unusual situation; in other cases a distinct cystic tumor forms about the enclosed teeth.

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## DISCUSSION.

Dr. J. K. Douglas, Sandusky, O.: I am sorry to say that I will not be able to discuss the subject very much for the reason that I have not seen the paper or read it over, and can only relate a few cases of this kind that I have observed in my own practice. I have never seen a mouth where there were so many teeth missing as in the case cited. Speaking of the cuspid teeth, I have one case in mind, a young lady twenty-four or twenty-five years of age. She had her deciduous teeth badly decayed. I was not positive but that she might have her permanent teeth and extracted the cuspid deciduous teeth, and no permanent teeth ever came in the place of them. Another lady had just one deciduous cuspid; she had her mind made up to have a gold crown, thought it would look very pretty. I put a gold crown on that deciduous tooth. She came in two years afterwards and said it was loose, a permanent tooth was coming in. She was very sorry and said she would rather have the gold crown. I think if we would look thoroughly into the cause of these irregularities it would be found that they are largely due to hereditary conditions.

**Dr. G. H. Wilson**, Cleveland, O.: I wish I were more capable of discussing this subject, going farther into the cause of the conditions presented. I think these conditions show plainly the degeneracy of man. They are certainly abnormal and not natural conditions, and may be due to a variety of causes, sometimes can be traced to a scrofulous taint in the blood. I have known of several cases where the individuals were apparently sound physically and above the average in mental qualities and they did not have the number of teeth they were entitled to. Sometimes there is an over-development in which there is something like ten supernumerary teeth. Fifteen years ago, a case came under my observation of a young lady twenty years of age still with twelve deciduous teeth in her mouth. Another lady came to me with a deciduous cuspid upon which I placed a crown.

**Dr. H. L. Ambler**, Cleveland, O.: I have a patient who wore a right upper cuspid until fifty years of age. At fifty-three she lost the temporary tooth and the permanent tooth took its place. She is now eighty-three years of age and has the tooth which was cut thirty years ago.

**Dr. Buzzell**, Port Clinton, O.: About fourteen years ago I extracted my own left upper deciduous cuspid. It had been annoying me for several years, and I thought I would extract it and see if I would not possibly cut another. The other did not make an appearance until about two years ago when it stuck its nose out. I had a similar experience to the one Dr. Douglas described. A gentleman eighteen years of age with both deciduous cuspids standing. I took them out and he has no others in their place except some artificial ones. I had another case where a patient with a cleft palate and harelip had those malformed incisors. They were very much diseased and decayed and I pulled them out.

**Dr. F. F. Chapman**, Cleveland, O.: I have in mind a case of a young man twenty-five years of age. He had no superior bicuspid on the lower jaw, the one on his upper jaw had not developed as much as it should and the lower jaw seemed to be full size. I tried to find out all I could about the cause of it. He said that he never had the proper number of teeth although his parents had and he was the only one in his family with this peculiarity.

**Dr. Buzzell**, Port Clinton, O.: I met with a case where a lady had the lateral incisor missing. On questioning her she said that the female members of her family had the same peculiarity, viz: the lateral incisor missing, but it was never known to occur with the male members of the family. In regard to the mental characteristics of this family, they were very intelligent.

**Dr. W. A. Price**, Cleveland, O.: These cases are very remarkable in this particular. The cuspids very frequently are missing, and out of sixty-five cases I have examined I have only found two where the cuspids were not found in the process.

**Dr. H. L. Ambler**, Cleveland, O.: The paper speaks of a case that Dr. Guilford had in Philadelphia which I can match in Cleveland. During the war a young man came to enlist and they would not take him because he had no teeth and never had any. He went to a dentist and had an upper set of teeth made; he then enlisted and went to the war.

**Dr. Siddall**, Oberlin, O.: I think it is characteristic of the whole human race and people generally that there is something missing and if you will look around you will find somebody else that has got it. A young fellow came to our town to learn the blacksmith trade. He was very badly deformed, the worst looking object you ever saw, but a very bright, nice boy. A young fellow who stammered very badly happened to be in my office and looking out of the window saw this boy and remarked: "T-h-a-t ffff-e-e-llow i-is pr-pr-et-ty www-e-ll t-w-i-i-s-t e d."

Dr. G. B. Williamson, Akron O.: A most remarkable case in this line is a gentleman I knew thirty years of age and had no teeth, never had any or any indication of teeth. Another was a boy with twelve supernumerary teeth and another with a double lateral incisor or two teeth grown together; aside from this he has the regular number of teeth.

Dr. C. D. Peck, Sandusky, O.: I saw a case some years ago. A boy ten years of age; where there should have been a central incisor there was a tooth as wide as two large central incisors, a very large and unusually developed tooth.

Dr. Varney Barnes, Cleveland, O.: I have observed in cases where children have teeth missing they are usually exceptionally bright children and also that when teeth are missing they are almost always missing in pairs. In the models exhibited the teeth seem to be missing in pairs and when present they are present in pairs.

We have a great lack of evidence on this subject and no collected data. The greatest research along this line has been made by Dr. Talbot, of Chicago. Some think that these cases are due to abnormal or diseased conditions; at the same time the teeth that do come through are hard, sound teeth and seem to be well formed, nice shapes and of good structure. I have two cases in mind, a boy and a girl. They each had two incisors missing, the rest of the teeth were as beautiful teeth as you will ever see. I think that we should collect all the data and information on this subject possible so that our successors will know more about it than we do.

Dr. C. B. Butler, Cleveland, O.: I think that Dr. Talbot has done more in the way of collecting data and preparing models in these cases than perhaps any other member of the profession. I recall now the fact that he presented a paper at a meeting of the old American Association and it was considered at the time one of the finest presentations that had ever been made, but it received very little attention. He then took the collection to the Smithsonian Museum at Washington.

I agree with Dr. Barnes that we ought to collect all the data possible on this subject and put it on record so that it might be referred to in the future. I do not now recall anything that has been put on record on this question.

Dr. Geo. Bishop, Cleveland, O.: I am inclined to think that a great many of these cases are undoubtedly hereditary. A great many are caused by defective nutrition. There is no stated period when children erupt their teeth. We have an established schedule, but they do not always erupt at that time. Children who are unhealthy and only partially nourished very seldom erupt their teeth until long after time. They will not erupt teeth until they become in a more perfect condition physically and the general condition built up. A great many cases are retarded through poor assimilation and malnutrition caused by weak digestive organs or food that is not of the kind to furnish bone substance. The germs are there but they have not had food to produce them. My boy did not have a tooth until he was a year old. When he was six months old the gums seemed to contain teeth yet they did not erupt. When fourteen months old and his health had improved and he had been given a tissue-forming remedy he began to erupt teeth. As an experiment we stopped giving him the tissue-forming food, and he then stopped having teeth. He cut all of his teeth inside of six months.

Dr. Bishop speaking of a case in his family reminds me of a case in my family. A daughter of mine at twenty-one days erupted one incisor and in three weeks she had a mate to it. The upper incisors that should match this were not erupted until she was eleven months old. When about five months of age she had an attack of pneumonia.

# DON'TS IN PORCELAIN INLAYS.*

BY W. T. REEVES, D. D. S., CHICAGO, ILLINOIS.

Don'ts are sometimes more important than doing, and to-day I shall present the subject from a negative point of view.

Don't wait for a higher degree of perfection in inlay work before entering upon the work, because the time is at hand when every one should be prepared to do some of his filling with porcelain. There are numerous places where porcelain is the only material indicated and where to-day you should no more think of putting gold than you would think of putting amalgam. Besides, your patients are fast finding out that something better than gold can be put in their front teeth, something that harmonizes with the tooth, that is less taxation upon their nervous system to prepare the cavity, and altogether a desirable thing to have; they are asking for this kind of work, and if you are not prepared to do the work they go to some one who is. You cannot hold them much longer with the cry of "fad, fad," that rolls off like "water from a duck's back." They have seen porcelain inlays in some friend's mouth and know that they are doing all right. They size you up about right, that you can't do the work, is the reason you cry "fad." Don't put it off any longer, but prepare yourself to do porcelain inlays.

Don't think that the esthetic is the only reason that porcelain should be used. That is one of the least of its many points of excellency. There is compatibility of material to tooth. Porcelain is the only permanent material we have that possesses this quality. Enough could be said on this one quality to make a paper by itself. There is permanency and preservation, two conditions that porcelain brings to the tooth to a greater extent than any other material.

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*Read before the Northern Ohio Dental Society, June, 1903.

Then there is ease of insertion, and that is a great feature in any operation—ease for both patient and operator. How many defective operations are allowed to pass because the operator is physically exhausted, or the patient is near nervous collapse, from the strain of a long, tedious gold operation? With porcelain all is different; patients hardly realize that they have been to the dentist's for two or three hours (until they get the bill), and leave the office with no dread of the future sitting. If it had been a gold operation, necessity is the only thing that would bring them back.

Don't make the mistake of thinking that porcelain is only indicated in a few places, and those of the simple order. *Porcelain is only limited in range of application by the limitations of the operator* It is equally good for the young, the middle-aged and the old; everywhere and under all conditions, it is doing excellent service and the more you use it the more you will find out and you will not be sorry.

Don't make up your opinion or judge by the failures you may have seen. If you decided what materials you would use and upon your *modus operandi* by the failures that come under your observation, would you be using gold to-day? I think not. You have no means of knowing what was the cause that brought about failure. It may have been gross incompetency on the part of the operator; he may have known nothing of the operative technic and still less of the material he was using. If, when he was a student, he had tried to accomplish an equal task with gold, with no better preperation, you would have laughed at him. Without thorough technic preparation, no better results should be expected than from the student with his first gold filling.

Don't think an outfit of bodies and a furnace is all there is to it—that when you have procured these you can begin on the next patient that comes in and make an inlay, for you will be grievously disappointed.

Don't think that watching a clinic gives you all the insight you need of the technic—and that you can go to your office and do the same thing, for you will find that you are up against it—that what looked so easy, is quite another thing when you try it on a patient; that there are lots of little details that go to make up the sum total of success that have escaped you, and that you are stumped to know what to do—your patient will soon discover that your are stumbling along and will lose confidence in your ability to successfully accomplish the task, that would still further hamper you, and the result would be a failure. Your patients would realize that you had been experimenting on them. It is all right to experiment on some one else, but no one likes to be experimented on. Prepare yourself by the best technic instructions you can get, that puts you in possession of his experimentation and experience and you begin at the point your instructor has attained. Go to the laboratory and by careful dummy-work assimilate those instructions so that your patient will not know whether it is your first, tenth, or hundredth inlay. If it is not possible for you to make your start through this source, begin by reading and studying the literature up to date; try and sift the wheat from the chaff; adopt that which seems best to you; prove it by your work in the laboratory. Hold fast to the good and discard that which is inefficient in your hands, even if you have to begin all over again. This is a slower method, but what one gets by hard knocks usually sticks, and success follows earnest effort.

Don't think you can gain the knowledge of how to bake porcelain by hearsay or reading. Every one must gain this through personal experience; the different stages of fusing can be shown and described, but experimentation is the only source of knowledge that will enable one to tell by observation just what degree of fusing has taken place. Porcelain may be a hard master, but, if understood, is a willing servant.

Don't pin your faith to what you have seen demonstrated at a table clinic. There are several methods that make awful nice table clinics—interesting, entertaining; yes, fascinating—but if it was a practical inlay they were making for a patient, you would find the item of time was too expensive a feature for the busy man to seriously think of following.

Don't worship at golden altars or follow after false gods. Look on high (high-fusing porcelain) for your guiding star, and you will not have put your confidence in something that will fail you, and you will not be trailing behind.

Don't try to compound bodies. There are manufacturers who have made this a life study, and they can do this much better than you can ever hope to do. Learn the different bodies so that you can produce results. Study along this line will benefit yourself and the profession.

Don't try to make an inlay without first securing working space before beginning the operation. No more separation is needed than should be had for any other material, but it is absolutely necessary to have working space. You can't put in a flat inlay, but having proper space you will restore perfect contour, perfect contact points and preserve the interproximal space better than with any other material. These three conditions will be appreciated by your patients, for it will put their teeth in a comfortable condition for masticating. You will be benefited and the standard of your work raised, for finding how much your patients appreciate this change, you will separate for all other work and not consider it time wasted.

Don't set an inlay that is not a perfect fit at all points. With porcelain it is possible for you to know before it is too late to correct, whether there is any defect in adaptation, contour or color; if lacking in adaptation or contour make another inlay. There is no physical strain upon yourself or patient to keep you from doing so. Many a defective piece of work is allowed to go through because the operator is not in condition to make a second gold filling. In making a second inlay the effect upon the operator is two-fold; a failure overcome is a stimulus to renewed effort, and the moral tone of the operator has been raised.

Don't try to select the color your inlay is to be by taking the tooth-guide and selecting a facing that seems to match the tooth, and then working to that color, for you will be working to something once removed from the original, and no matter how well it might harmonize with the adjoining teeth if used as a crown, it would not match either tooth if a corner of the facing was cut off and placed against the tooth.

Don't take the shade-guide furnished with each outfit of bodies and try to select one that is a match for the tooth. The colors in the tooth vary from top to bottom, and you must have them in the same relative position in your inlay, in order to have inlay match tooth. Use the shade-guide that by comparison with the tooth you can determine what colors you see in the tooth. The shade-guide gives you the color the body will be if you bake the same bulk and to a full glaze; you can get any shade of a given color by the thickness of the layer you bake.

Don't bake your inlay all of one body, even if you could make it in one baking, for your inlay would only match at one point and at the others would be off color, and then you would be up against what they call the "shadow problem."

Build in layers, bake in your colors strong enough that reflecting through an overlying or enamel layer gives you the colors you want; this will give you translucency and is the only way you can produce translucency; baking in layers, the strata breaks up light absorption and refraction and your inlay will look the same from all points of view. Baking in layers will prevent the cement showing through to the greatest extent possible.

Don't grind an inlay after it is set on any surface other than the grinding surface of molars and bicuspids, and the cutting edges of anterior teeth. All grinding that is necessary should be done before the matrix is removed and then returned to the furnace and glazed. The glazed surface of porcelain is a protection to adjoining tooth surfaces.

Don't undercut your inlay with diamond disc or knife-edge stones; use hydrofluoric acid; that will remove the glaze and leave a roughened surface that cement will adhere to, and not take away from close adaptation.

Don't try to neutralize the acid. There is a fine, palpable powder as the result of the action of the acid, and this must be removed mechanically or it will interfere with the retention of the inlay; use water and a stiff bristle brush.

Don't set an inlay without putting on the rubber dam wherever it is possible to do so. Always have pressure either by wedge or ligature, and leave thirty minutes before removing dam; cement setting under pressure gives best results and prevents expansion making a noticeable joint.

Don't remove the excess cement until after you have removed the dam; after the saliva has bathed the tooth, the cement will come off easily with no danger of dislodging the inlay.

Don't try to remove the slight line of cement at the joint; let that wear away; it will wear away in five or six days.

Don't fail to tell your patient that the tooth has dried out under the rubber dam and is several shades lighter, and that it will be several hours before it is back to color, and that the inlay will look better a week hence than it does the first day.

Don't wait for others to discuss the subject or ask questions. A question that may seem trivial to you may be what lots of others would like to have answered.

## DISCUSSION.

DR. H. F. HARVEY, Cleveland, O.: I will say to start with that I have had very little experience in this kind of work. The first thing Dr. Reeves advises is not to wait until we have arrived at perfection in this work before undertaking to practice it. We should aim to come as near perfection as possible, and the only way to do this is to follow the advice he has given us in his paper; that is, get all the technical information we can and then go to the laboratory and practice. We cannot expect to arrive at perfection in the first operation or in a short time. This work certainly requires as much skill and care in every step of the work as anything else that we do. There are several reasons why this work should come into favor; first, the condition of the patient; second, the condition of the teeth, and third, the esthetic side of the question. I hardly think the argument that it is easy for ourselves should have much weight.

If you study this paper and other papers that Dr. Reeves has written, you will learn much in regard to the method of getting color, etc., which will be of practical benefit to you. Some years ago I undertook porcelain work with low-fusing bodies and they were far from satisfactory, and I abandoned porcelain inlay work entirely; but since better bodies and better methods of getting shades of color have been introduced, the work has improved so much that I have taken it up again in the last year. At the same time we should go a little slowly at first and let it grow a little on us. The doctor says that we need no more space than we do for other fillings. I think this work requires more space than is needed for gold fillings. Another advantage is that you can correct imperfections. The lessening of the physical strain on the patient is certainly quite an advantage when you come to undertake a large filling. I feel greatly indebted to Dr. Reeves for what I know about porcelain inlay work.

DR. S. B. DEWEY, Cleveland, O.: Porcelain inlay work has come to stay. As the essayist says, we are not going to gain any knowledge or perfection if we wait for some one else to do the work. We must do it ourselves. I think in this matter of porcelain work not as many of us will become experts as with gold. It requires a person with a high conception of art to be able to select the colors and shade different colors to different teeth and blend a variety of shades on the same tooth. We may not be artistic enough to produce the result that Dr. Reeves produces every day. It will take long years of practice before some of us can do this. Many teeth can be saved by this method and made useful and beautiful which would otherwise disfigure the mouth of the wearer. I agree with the essayist that it is much easier in many cases for both patient and operator, and for those patients who cannot stand the long gold operations it is really a Godsend.

A man to be successful in this work must be able to give close attention to details. In reference to selecting colors: It helps me greatly not to match the tooth by the shade-guide but look into the tooth and use the guide in comparison to what is seen in the tooth. Do not be too hasty in brushing off the excess of cement; it is better to leave it on for a while, although for a short time it may look unsightly.

Dr. G. D. Billings, Medina, O.: I came here to learn, and I would like to ask Dr. Reeves whether it is possible to use this method where a tooth has been broken off by accident, as I have a great many cases of this kind.

Dr. N. T. B. Nobles, Cleveland, O.: The matter of color has been one of my great troubles. I have been using a combination of colors, making the body the same color, consequently cannot get the blending of color as it should be. I do not know of anything easier than porcelain inlay work.

Dr. W. G. Ebersole, Cleveland, O.: I am greatly interested in porcelain work. I have seen Dr. Reeves' work at various dental meetings. I think his way is the way. I want to warn every man that attempts this work that he is going to have a mighty struggle. It is entirely different from anything we have done in college or elsewhere. Porcelain inlay work has come to stay, and if we are going to make a success of it we have got to work and work hard. There is no doubt of its being easy for the patient. I would advise the beginner to work a great deal on models and secure a certain degree of efficiency before attempting to put this work in the mouth. I am a disciple of porcelain work with high-fusing bodies.

Dr. G. N. Wasser, Cleveland, O.: All I know about porcelain work is what I have learned from Dr. Reeves. I certainly am a disciple of porcelain, but, as has been said, it is a work requiring a great deal of skill and attention to detail in every step, and I would advise the student of this work and the beginner to go a little slow at first about putting it into the mouth.

Dr. E. B. Lodge, Cleveland, O.: I think in this work, as in other things, there is a tendency to overdo a good thing. To have access to this material is a great boon in an esthetic way at least. I think it is a great step in advance and represents the highest art obtainable in dental practice. It is true that it requires very close application and the greatest of care in every detail to get the proper results in this work, but those of us who love our profession and want to advance constantly to higher and higher degrees of perfection, I am sure, will be perfectly willing to exercise this care.

Dr. L. L. Barber, Cleveland, O.: I want to emphasize what Dr. Ebersole says, that those who undertake this work have a struggle before them, as you will find out by experience, and the neglect of proper attention to any detail in any step of the work, or carelessness in any way, will cause as much, if not more, trouble than in any other kind of work. Another matter of importance is the overcoming of thermal changes in the tooth I believe there will be less cutting to do in the very sensitive part of the tooth. You have to remove the decay from the bottom of the cavity and that is about all you have to do. I will say that the color problem bothered me for a great many years; in fact, it is only since I have learned Dr. Reeves' method that I have done work in this line that I am not at all ashamed of. I believe it is absolutely necessary to get them under pressure and keep them there, and you will not have to use undercuts. There are certain low-fusing bodies on the market that will stand and keep their color all right in some cases. If you have to grind the surface after your filling is made they will not keep their color, but you do not get the result that you do with high-fusing bodies which can be depended upon in all cases.

Dr. W. T. Jackman, Cleveland, O.: I myself have been so conservative about this work that I have not done any of it except in a technical way. I was glad to hear this paper because of the positive assertions in it as well as negative ones. The doctor's statement that these things are for any and every place is a broad one. I would like to ask the Doctor what kind of a cement is best to use? I have been afraid to employ this inlay filling on account of the poor cements that are on the market. I have seen considerable of this work and never saw any of it that had been in a year but what there was a distinct line showing around it. If the doctor will tell us how long he has been doing this work, he will settle a great many points for us.

Dr. H. G. Husted, Oberlin, O.: Can you vary the color of filling by using different cement? A short time ago I examined a mouth of what seemed to be perfectly sound teeth. On very close inspection I discovered that there were seven porcelain fillings.

Dr. W. A. Price, Cleveland, O.: Do you use thinner platinum or cut away enough good tissue to make a properly-formed cavity in case of small cavities?

Dr. W. A. Siddall, Cleveland, O.: I have put in some fillings and my trouble was not in trying to get them to come out, but I wished very much that they would stay in. I have learned also that when I start on a porcelain filling I do not know when I will be through, whether this week or next. Is it wise in corner teeth to make a step such as you would make for a gold filling, and also in bicuspid fillings where you can cut the matrix out? I have found that the cement will stick to the porcelain but will not stick to the tooth. What is the objection to slight undercuts?

Dr. J. F. Stephan, Cleveland, O.: I have been doing porcelain work for some time, starting with the low-fusing bodies, but discarded them. Until I learned of the work of Dr. Reeves and the high-fusing bodies I did not feel that the work would be successful. I have received so much benefit from the instruction Dr. Reeves has given me that I wish every one might attend his clinic. There is nothing done in the line of artistic work any greater than this. The cavity preparation is entirely different from the cavity preparation for gold fillings. In regard to learning the work, it is like everything else, difficult at first, but patience and practice will overcome all difficulties and there is no reason why we cannot all become experts in this work and after a certain amount of practice and experience it will become easy. There is not a mesial or distal angle that cannot be restored and look much better than gold ever could.

Dr. Reeves, Chicago, Ill.: Dr. Harvey asked about space. He thought there were places where he could put gold fillings in with less space than necessary for an inlay. I think there are more places where you will get along with less space for inlays than otherwise. In molars and bicuspids you will surely get along with less space than you would need for gold fillings and have the full contour restored and get contact points that are simply perfection.

Dr. Dewey thinks there will not be as many expert operators in porcelain as in gold. There is where he makes a mistake. Porcelain work is in its infancy, we might say, having been introduced in the last five years, but I think that to-day you can find more expert inlay workers—ten to one—than you can find in the same grade of work with gold. You can't any of you come very near counting on the fingers of your two hands those operators whom you look up to as being good gold operators in this country. I think you can find twice as many as this who excel in porcelain inlay work in Chicago alone. I know a great many operators who are doing extremely good work in inlay, much better than they can do with gold, and they have only been working at it a year. This is something to be considered. You will come up so fast to the point of doing excellent work, if you start out earnestly, that it will surprise you how quickly you will be using it everywhere. The labial surfaces of anteriors are about the hardest you will have to deal with. Begin with the simple cavity for your first work. I believe any operator, wherever located, if he will give one-tenth of the time to the technic of porcelain inlay work that he gave to learning to put in gold fillings, he will have the best of results in this work. You can always be able to find the joint. You cannot slide across like you can with gold fillings. You will look into the tooth very carefully before discovering that there are inlays in the tooth.

In regard to lowering the moral tone, as some one fears, I would say, if you want to swear, swear under your breath, and so not disturb or lower your moral tone.

Dr. Billings asked about corners. There are no corners where I would hesitate to place inlays. In any place where we can get cavity formation, porcelain can be used. The amount of undercutting you would do I do not think would give you any additional retention. The matrix must be adapted to the interior of the cavity and then the inlay set under pressure. A great many case where you see the line at the margin there has not been sufficient pressure. In regard to time, the inlay work will be accomplished, taking cavity for cavity, in a great deal less time than gold work. I have always used Harvard cement. There is a new cement now on the market which sets quicker than the original Harvard cement, but I have not used this on account of its producing a different mechanical action.

Dr. Price asked about platinum in small cavities. I use one-one thousandth. If the cavity is a pin-head cavity, use gold.

Dr. Price: Suppose the small cavity shows, would you enlarge it to the size of a No. 4 bur?

DR. REEVES: I would. The question of cavity preparation I can hardly describe so that you can get a correct idea of it. The main thing is to remove all decay to good, sound, glistening enamel, get a good seating form for setting purposes so that after the matrix is taken off you could not tell which end is which, they are so near alike.

Some one asks, what about the price for porcelain inlay work as compared with the price for gold work? You should get from 25 per cent. to 30 per cent. more for porcelain inlay work than for gold.

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# A FEW CONSIDERATIONS IN CROWN AND BRIDGE-WORK.*

BY J. Q. BYRAM, INDIANAPOLIS, IND.

There is probably no branch of dentistry that is abused as much as crown and bridge-work. The many failures in this branch are probably due as much to lack of judgment as to lack of skill. Over-enthusiasm on the part of many of the best prothetists has caused them to advocate many impracticable methods. Enthusiasm is essential to all progressive work, but unless it be guided by judgment, based on experience, it may become harmful. Advancement in art and science should be slow but steady. Men are too often criticized for being conservative, but if the conservatives did not curb the over-enthusiasts, dentistry would not hold the high place it does to-day.

It is not the purpose of this paper to go into the technic of constructing crowns or bridges, but to offer a few suggestions. Like the "old, old story," this subject is ever new. We will consider crowns as single pieces of work before taking up the united crowns, or bridge-work.

## CROWNS.

The preparation of roots and teeth for crowns does not receive enough attention. Crowns are too often adjusted on teeth that have not been therapeutically prepared for their reception. Only a few years since it was considered good practice to cap pulps in order to retain their vitality. We sincerely hope no one practices such methods to-day. Except in cases of secondary deposits of dentin, or where teeth are malformed, the pulp should be removed and the canals filled before the crown is adjusted. If caries has not progressed to the extent of pulp exposure, a filling is indicated rather than a crown.

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*Read before the Eastern Indiana Dental Society, May, 1903.

It is much easier to tell how to mechanically prepare teeth for crowns than to prepare them. When a post crown is indicated the enamel beneath the gum margin should remain. If this enamel is removed the gum is left in abnormal relation to the tooth-root, and it may become congested. This enamel should be removed for collar crowns in order that the collar may take its place. If the enamel is allowed to remain the gum is thrown out of relation and soon becomes congested. Enamel cleavers and other instruments for removing enamel should be used freely, conscientiously and patiently. Ill-fitting bands have caused many gingival, pericemental and alveolar lesions, and the only remedy is properly-fitting bands.

### STRESS.

Stress should receive more consideration. The selection of a crown for any particular tooth should be governed largely by its stress. Any tooth whose lateral stress is greatest, should have a post extending into its canal to assist in resisting the stress applied to the crown. Any tooth whose vertical stress is great, should have its occlusal surface flat so that the crown may rest on a flat base. If the pulp canal has been enlarged by decay, it is necessary to give additional resistance to lateral stress by the use of a post-collar crown. This not only strengthens the root, but prevents the post from loosening in the large volume of cement, used as a retaining medium.

### CLASSIFICATION OF CROWNS.

The classification of crowns according to stress may be divided into those for incisors, and those for bicuspids and molars. Any form of crown except a post or post-collar crown is seldom indicated on incisors and cuspids. Of all the post crowns used the Logan is par excellence. The Davis and Brewster crowns have many advocates, but it is doubtful whether they have advantages over the Logan. The Richmond crown is probably used more than any other form of post-collar crown. The banded Logan or the platino-porcelain crown have advantages over the Richmond. They are more translucent, show no metal except at the gingival and are stronger crowns than the Richmond unless the latter has a tip on the incisal edge. One of the best crowns for incisors and cuspids is a Logan crown with a platinum cap soldered to the post of the crown and new porcelain baked in the space between the floor of the cap and the crown. The platino-porcelain crown made by constructing a platinum cap for the root, extending a post into the canal and soldering it to the cap; then adjusting a facing to the post and cap and soldering the pins to the post and fusing new porcelain on the lingual surface, makes a strong and esthetic crown. Where there is strong occlusion on the incisors or cuspids, and post-collar crowns are contraindicated, shell crowns with porcelain faces should be used.

### PORCELAIN-FACE SHELL CROWN.

Dentists who do no porcelain work should construct porcelain-face shell crowns for superior bicuspids and first molars. A method of constructing this form of crown is as follows: Prepare the tooth as for a shell crown, except that the buccal surface should be beveled from the gingival to the middle of the tooth, bucco-lingually on the occlusal surface construct a band for the tooth as for a shell crown except that only the gingival one-fourth of the band on the buccal surface should be soldered. The band should extend to the contact points. The buccal portion should be trimmed to allow for the porcelain facing. Grind a facing to fit in the buccal portion of the band. Swage a backing of 32-gauge pure gold to extend from the bucco-gingival angle to the bucco-occlusal angle. Solder the backing into the facing, then adjust in position. Fill the occlusal portion of the band with modeling composition and obtain proper occlusion, then carve the cusps. The facing should form the bucco-occlusal angle of the cusp. Construct die and counter die and swage the cusp, then fit it to the band and facing. Remove the facing and solder the cusp to the band. Readjust the facing and wrap it in asbestos fibres and solder it from the inner surface. This crown has the advantage of having the buccal surface of porcelain and exposing but little gold.

Different forms of platino-porcelain crowns are used on bicuspids, but because of the lateral stress on these teeth and the friability of porcelain their application is somewhat limited. When the banded Logan or the platino-porcelain crowns are used, the framework is constructed as for an incisor, with the platino-porcelain crown, the lingual cusp is built up by the addition of new porcelain.

### BICUSPID CROWNS.

One of the best crowns for inferior bicuspids is made by constructing the framework of platinum and soldering a saddle-back tooth to the post, then filling the space on the lingual surface with new porcelain. Another method of constructing a crown for inferior bicuspids suggested by Dr. F. R. Henshaw, is to construct the cap of gold and solder a post to the cap. Grind a saddle-back tooth to proper occlusion, then swage a backing of 32-gauge pure gold to the tooth. Adjust the tooth in position and fill the space on the lingual surface with gold solder. Crowns constructed of saddle-back teeth are better adapted to inferior than to superior bicuspids. The force is directed in such direction to the superior bicuspid that the lingual cusp is liable to fracture, while the force is directed through the buccal cusp of the lower bicuspid toward the center of the crown, causing the greatest stress to be on the buccal cusp.

Any form of porcelain-face crown for inferior bicuspids or molars with the occlusal surface of gold, has no advantage over the all-gold crown. Platinum-porcelain crowns may be used for both superior and inferior molars but it is questionable whether they are often indicated.

### BRIDGE-WORK.

Bridge-work in the hands of the skillful, conscientious dentist has proven a boon to humanity, but bridge-work as it is constructed by many, has proven a curse. Lack of skill is not the only cause of poor bridge-work. The greed for gain has been instrumental in causing many bridges to be constructed where partial plates are indicated.

Two points that should be borne in mind in the construction of a dental bridge are its mechanics and esthetics. In many cases conditions are such that in order to construct a bridge mechanically correct, it must be done at the expense of the esthetic; but in too many cases both mechanics and esthetics are at fault.

The same considerations, governing the mechanical resistance of roots of teeth for artificial crowns, apply with increased emphasis when they serve as abutments for a bridge. Any stress greatly in excess to the amount normally borne by a tooth will cause it to loosen and finally to be lost. As a rule teeth protest against stress received in any direction other than normal. The lateral stress is the one tending to dislodge bridges, and the tendency to displacement is in ratio to this stress. The amount of stress on any tooth is in proportion to the development of the muscles of mastication. There is a constant relationship between the length of the cusps and the length of the over-bite; the greater the over-bite, the greater the lateral stress. The occlusal surface of dummies should be given a smaller area and the cusps should be made shorter than those of the natural teeth, so that the vertical and lateral stress upon the abutments is lessened to a required degree. A bridge should be designed to cause the articulation to be strongest in the direction of greatest resistance. The stability of a bridge is insured by constructing and attaching it so that neither the bridge nor any part of it has any movement independent of the abutments.

The use of all-gold crowns for abutments on incisors and cuspids should receive more serious attention from the profession. If a bridge from cuspid to cuspid is indicated and if the muscular development of the patient will permit, the abutment crowns should be some form of porcelain-face crowns even though the pulps of the abutment teeth must be removed.

If the function of the pulp is to form and then nourish dentin, it may be removed from a tooth (provided the pulp canals are properly filled) without affecting the life of the root.

It is essential that the incisal edges of facings be ground in such manner, so that the least possible amount of gold is exposed, consistent with strength of the bridge and proper protection to the porcelain facings. This is done by beveling the lingual-incisal edge of the facings so that they form obtuse angles with the plane of the lingual surfaces of the facings.

Temperamental conditions are too often ignored in the construction of dental bridges. It is not uncommon to see patients with large angular teeth, wearing bridges with artificial teeth running to curves, or vice versa. We see too many bridges constructed with bell-crown teeth where thick-neck teeth are indicated. Another criticism of too many bridges is that the edges of the teeth are ground at right angles with the long axis of the facings, forming sharp proximo-incisal angles. In cases of irregularity of the incisal edges of natural teeth, the incisal edges of the artificial teeth should be ground to correspond to the natural.

# EYES.*

BY C. R. BUTLER, M. D., D. D. S., CLEVELAND, OHIO.

Children come into the world blind and for a safe and correct development of visual power they should be brought to the light gradually.

Men of old used to see trees as men walking.

Man looked for thousands of years before any science was discovered. And the Psalmist earnestly prayed, and said, open thou mine eyes that I may behold wondrous things out of thy law.

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*Read before the Northern Ohio Dental Society, June, 1903.

A clear representation of the outer world is impossible to a blind person, and further, as with the other senses, so with the eye, great practice is necessary in order to perfect its use; and finally that man must learn to see—as he learns to walk and to speak—and that two good eyes are necessary to a correct perspective.

The twentieth century has brought more things to view than all preceding time. Seeing is the attainment of genius.

Edison, with other electrical wizards, had failed for many years to get what was wanted as a component of the modern incandescent lamp, until he saw with that eye which is more than physical, the bamboo filament in a palm-leaf fan. The ordinary methods pursued in manual training—in securing a knowledge of lengths, shapes, proportions, and so on—by rules, gauges, compasses and calipers develops no originality and power to create; the pupil works by direction only; such training is detrimental and injurious to the mind.

Elementary courses should be such as to excite a love for the work.

*First.* In a practical development of the organism itself, the hand, the eye, and brain, by the acquisition of their conscious control, to be followed by automatic control;

*Second.* In the use at certain periods of powerful exercises to reform, or correct, awkward muscular movements and habits, thereby giving facility, balance, proportion, accuracy, magnitude, fitness, and grace in movements.

In some of the foreign schools of manual training, Germany for example, the pupil is exercised in drawing with the right hand, and then with the left. Ambidexterity is further taught by requiring the use of the left hand in sawing and carving wood and in similar occupations. It is claimed that not only does this render a person almost doubly efficient, but that the general health is much improved by it, as a more nearly perfect circulation is thus established, and I am improving the cerebral organism.

Sir Francis Galpin speaks of the importance of the visual image, which can only be had by looking at the thing itself, and not its symbol or word. Exercises for acquiring accurate and permanent organic memories of environment, from nature, from art works, and ornaments of best periods, and creative designs in various materials.

Exercise in ambidexterity is for the physical co-ordination acquired. Biology teaches that the more the senses are co-ordinated to work in harmony in the individual, the better; if I work the right hand, I use the left side of the brain. In truth, I exercise some special region of the brain in every conscious movement I make, and in every change of movement I bring into play some other center. If, by performing any such action with energy and precision, I aid in the development of the accordant center.

The average man sees things in the mass, and therefore sees nothing; things, to his vision, are run together in hopeless jumble, all in discord, confusion worse confounded.

If you want to appreciate the beauties of a thing, you must be able to sort out some detail with microscopic exactness.

Dr. Atkinson used to say that one must learn how to see with the microscope if he would become a good histologist.

The artist that paints fruit that attracts the bird, and puts the flush upon the cheek of the child portrait that has the delicacy of the luscious peach, must sort and handle colors with an inspired eye and hand. Two or more observers attempt the same feat, differ in their results. We are apt to think that when a simple occurrence appears right before a man's eyes, he sees it just as it is.

But astronomy, we are told, has learned that this is not so. Eyes differ in their power to see things correctly.

We have what is termed personal equation. This is shown with children. A mother drops a small article and she asks A to find it. He or she scrambles around and fails, while B makes a dash, and finds it at once.

Standard time is ascertained by the passing of the star Taurus across the meridian. But the observers' notations have to be corrected by the chronograph and micrometer.

I shall not burden you with optical terms and differentiations. All this you can find in some good text-book on optics.

The expert diagnostician sees with more than ordinary physical eyes a vision that he wots not of. What is called modern sciagraphy is no new thing *per se*. And if there is any class of men that needs good eyes, eyes that will see things quickly and correctly, it is the dentist. And yet the exhibition of a large proportion of the work, especially in prosthesis, we might easily say that a large number must be color-blind, so far as artistic work is concerned.

If it be necessary that railroad men have good eyes, also those in the maritime service, why would it not be a wise plan for those in charge of our dental schools, when a young man presents himself for registration as a student, to see whether he has good visual powers, as one of the all-important requisites of physical ability?

The writer has wondered whether with our modern appliances, with so much gilt and nickel in the strong light that is required, it is not producing an eye strain that is detrimental to general health.

The skilled mechanic who serrates our fine points of pluggers, and the engraver, can work but a short time without stopping to rest his eyes, while the dentist is often obliged to continue the operation. And now the porcelain inlay worker who becomes anything of an expert, must tax the eye severely.

To be a great success as an after-dinner speaker, and you are called up to respond to a toast or sentiment, make as little reference to the subject as possible. So you may think but little has been said in this paper about eyes.

Well, I did not intend to say much, just enough to set you to thinking how best to use the visual powers you may have.

The eyes are the most expressive part of the human face.

Poets and painters have done their best to give their ideal of the lovliness and marvelous power in all ages; and are compelled to say that pen and brush is impotent as compared with the matchless power of the eyes.

Canon Ainger, biographer and editor of Charles Lamb, once uttered this pithy saying:

"You may preach like an angel, but if you can whistle on a stick, people ignore your preaching and speak of you as the man who can whistle on a stick."

"Loving eyes whose silent persuasion,
  Floods the soul with melodies complete,
Thrilling it with a divine benediction,
  Leaving the odor of incense sweet.

Sentinel angels of love that impart best joys
  To the moodiest mind,
Banishing sorrow and care from the heart,
  Leaving a glow of sunshine behind."

## DISCUSSION.

**Dr. F. S. Whitslar**, Youngstown, O.: The most wonderful part of the body made in the image of God is the human eye. It is an organ to which only superlatives apply. It is the most wonderful, delicate and most expressive part of the body. Its wonderful mechanism furnishes a study that it takes years to master and after that there are still mysteries to solve. Science tells us that the most wonderful things in the world are the most intricate and delicate. This is true of the eye. The eye fears danger more than any other part of the body. It may be truly called the window of the soul. While it is admitted to be a fact that the eye is the most sensitive part of the body and that sight is the most precious of the senses, the organ of vision is abused perhaps more than any other organ of the anatomy.

We protect our heads, we protect our hands and feet, but allow our eyes to undergo great exposures and risks. Do not try to read when the light is dim. Do not sit to read facing the light. Rest the eyes. I wish to emphasize that fact. Rest the eyes as you do other parts of the body. Do not think when you sit down after a long day of close application to business that you are resting yourself if you are reading, for then the eyes are working at the very time when it is likely to lead to permanent injury. Blindness in many cases can be traced to excessive use of the eyes. There are more children to-day suffering with their eyes than ever before and it is because of overwork in the schools. It would be far better for them to devote less time to their books and save their eyes, and we would not see glasses on so many children as we do. One of the many diseases of the eye is granulation of the eyelids. There are several forms of this disease and some of them are very infectious. Light was created before eyes were made, and the human eye was so created and so formed that it could see in the light, unlike the eyes of some animals that are made to see in the dark. I would emphasize the importance of the eye in the language of one having authority to speak: "The light of the body is the eye."

In conclusion, let me say to those who with myself have seen three score years and more, let us husband well the light of these bodies; and to the young men let me say in all kindness and interest in your welfare, take good care of the eyes.

Dr. Frank Acker, Cleveland, O.: The training of the eye involves the training of the hand and mind and will. The new systems of education recognize the importance of this all-round development, and scarcely can you find a city in this land to-day where some manual training and field-work is not part of the regular curriculum.

The peculiar conditions of the dentist's work in regard to the need, often, for long continued close work make it all the more essential that he take good care of his eyes.

Rest and change are always grateful, but when the fact makes itself felt that rest and change are required more frequently, don't delay too long. The dislike to wear glasses has cost many a man the use of his eyes. Many of the serious diseases of the eye are brought on by strain in trying to focus the object when the natural lens has become incapable of such action.

One of the first limitations apparent to a novice with spectacles is that the angle at which he was formerly able to see in his work has become restricted, and he must confine himself to larger use of his mouth-mirror; but patience soon makes the artificial aid an accustomed element, and what for a short time prooved a burden soon becomes a blessing in the increased accuracy of vision.

Dr. W. H. Whitslar, Cleveland, O.: The most of us have to adopt the use of glasses because we are far-sighted. We must adopt a glass to allow us to see at a range of 14 inches with perfect clearness. If we have astigmatism, that must be corrected by the proper glasses to relieve the strain in one eye or the other. The main trouble with us as dentists is that we become short-sighted. A prominent oculist said to me a short time ago that dentists abuse their eyes by drawing them too close to their work. I think that we ought to make regular visits to our oculist and have him examine our eyes and renew the glasses, and thus keep them adjusted to our eyes, and in that way we could save our eyes a great deal more than we do. We are also likely to produce inflammation by too close application to work. Rest is the only remedy for this. The eyes must not be taxed beyond their power of endurance. The general condition of health also has much to do with the eyes. When certain organs of the body are not doing their proper work we can notice a direct effect upon the eyes. This is especially true when the liver is out of order. Besides the other symptoms there will invariably be difficulty with the eyes, which can only be overcome by treating the cause of the trouble and paying attention to the general condition of health.

**Dr. W. G. Ebersole:** I would like to mention a very practical point on this subject. Last year, and for two or three years, I have made a plea for darkened ground back of the officers. I know that it is very trying to a great many of us to have to sit all day facing the bright light back of the speakers. I simply want to make this suggestion—that the curtains be drawn all the time for the benefit of those who have to sit facing the speakers.

## MY METHOD OF MAKING A BICUSPID CROWN.*

BY F. F. CHAPMAN, D. D. S., CLEVELAND, OHIO.

I only claim an advantage in making this crown for certain cases. Where the caps of the adjoining teeth are long and pointed, the articulation very close and where I do not want a gold crown, but at the same time one which there will be no danger of breaking.

I first prepare the root the same as for a Richmond crown, except that I leave all of the lingual wall standing that is possible, but grinding the buccal wall up to the margin of the gum.

I then make a cap for this the same as you would for a Richmond.

Those I have made have been without a pin and I have had no trouble with them coming off.

After taking impressions and bite with cap in place, put the model upon articulator and choose facing.

Grind facing to fit cap and grind the cap short enough for gold tip. Then on the back I grind from the pins to the point, concaving this portion mesio-distally. I grind this thin enough to allow for backing and some solder which will make it stronger than as though the stress of mastication came upon the porcelain.

Back this with 30-gauge 24k. gold, burnishing it over the point, making the tip of 20k. solder, which will stand more wear than pure gold.

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*Read before the Northern Ohio Dental Society, June, 1903.

Invest and solder with 20k. solder, using enough to a little more than fill the concavity made by grinding.

After this is done and the tip finished and polished, fit into place and if necessary grind the back so the occluding teeth will articulate and just touch the facing.

Wax in place with just enough wax to hold. Take a small piece of soft wax and warming it press into place to form the occlusal surface and lingual wall.

Close the articulator upon this, taking care that in doing so you do not displace your facing, and trim away surplus wax, shaping occlusal surface and lingual wall as you want them to be in the finished crown.

Remove from articulator and invest, letting the investment cover it all except the lingual wall and all of that portion which is made up of the cap.

After boiling out the wax, solder with 18k. solder.

Take care that the investment is very hot before starting to flow the solder.

Fill all the space occupied by the wax and you will have a crown in which the articulation will be perfect and one which with little gold showing will stand all the stress of mastication.

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## DISCUSSION.

Dr. F. L. Miles, Cleveland, O.: I think perhaps in the limited number of cases mentioned this crown would probably be of service. The making would probably be difficult; flowing solder into an investment as described will be found to be a very difficult operation. The absence of a post is a weakness. Crowns should not depend wholly on the grip of band for rentention, for unless the lingual wall is high the band must extend far enough under gum to be an irritant.

Dr. M. C. Ramaley, Cleveland, O.: I have never found in my practice a case where I could not use porcelain and especially where it is difficult on account of short space to make the work strong and at the same time of good appearance.

Dr. D. A. Allen, Toledo, O.: This subject is certainly a very interesting one. I have a method of making crowns which I think is very similar to the one described by Dr. Chapman, but much simpler to make in cases where you have a very short space Make a gold crown in the usual way, put it on a stick that will fit it, saw the face of band out nearly to the bottm, fit the porcelain in after preparing it as the doctor describes. This method of sawing out and fitting the porcelain in is very much simpler to manipulate. It is also very difficult to flow solder into the hole without making a bad appearance when it is finished.

Dr G. H. Wilson, Cleveland, O.: There is one point which would be considered in this subject and that is the grinding out of the occlusal end making the crown largely of metal.

Dr. Chapman: I think those who have taken part in the discussion must have misunderstood most of my statements. So many speak of experiencing difficulty in flowing the solder into the hole. I do not think they would find any trouble in this respect if 18k. solder is used. Use very small pieces to start with. I have never had a particle of trouble. This does away with any necessity for grinding to get your articulation.

# A FEW LITTLE POINTERS.

BY STEWART J. SPENCE, CHATTANOOGA, TENN.

Under the above unassuming title I published last year two articles, composed of brief statements of small items of interest, which enjoyed such extensive circulation by being copied and recopied that—although some got mutilated in their wanderings—I am encouraged to send forth a new brood. But —*sic gloria mundi*—these wandering ones were accredited to almost everything else than their humble author, the last straggler of them that came in being tagged *Pacific Medical Journal!*

## A NEW USE FOR THE BACK-ACTION END OF THE AUTOMATIC MALLET.

For over twenty years I used one of these double-action mallets without knowing what that back-action end was for. Of course, when I bought it the smiling salesman told me it was to work around corners; but I soon found this to be a pleasant fiction. I know now. I screw a foot-shaped plugger into that back end, and use it with straight pressure and no blow, and find it exceedingly useful as an aid in filling approximal cavities; especially where gold has to be pressed against enamel, which is so liable to crack under the blow of the mallet.

## CURVING THE DONALDSON PULP-CANAL CLEANSER.

We know that these broaches are made some long, to be used straight in the broach carrier, and others short, to be used at a right angle. I have almost entirely discontinued the use of both these ways finding that to bend the cleanser into curve, after having fixed it in the carrier straight with the handle, makes it more easily applied to most canals, and that when so bent, and then rotated in the canal, it is forced against the sides of the canal better than when used straight.

## TO PREVENT DARK JOINTS IN SECTIONAL PORCELAIN GUMS.

Do not attempt packing the joint from the palatal side after opening flask, which can rarely be done well, but before flasking remove two blocks from opposite sides of the denture, one being that of the incisors, and the other, the bicuspid (which can best be done by cutting through the wax around the pins with a sharp instrument, then removing this section of wax with the block) thus exposing four of the five joints. Then spread a little creamy oxyphosphate of zinc over the exposed surfaces, and replace the blocks. If now the joints are not spread in flask-closing, no rubber can squeeze into them. To prevent this spreading, give the investment twelve hours to harden, and carefully avoid excess of rubber, making abundant waste-gates. Or, use Dr. Spence's special plaster for models and investments, which sets five-fold harder than plaster of Paris, and is also non-expanding.

### TO WARM WAX IN FLASK WITHOUT MELTING IT.

Immerse it in water kept at 150 degrees F. for five minutes, using a thermometer in the water. If immersed in boiling water it softens in about two-and-a-half minutes, but some parts of it become molten, while others, more remote from the heat, remain stiff. The five minutes' treatment more equably softens the whole without melting any.

### POLISHING THE BACK OF THE MOUTH MIRROR.

This will aid in throwing light upon a tooth; as when the face of the mirror is turned to the cheek in the act of drawing it aside.

### TO PREVENT WATER FROM GUSHING OUT OF THE MOUTH WHILE SYRINGING.

Ask the patient to close his lips, or, easier yet, hold the mouth-mirror so that the stream dashes against it and is turned back into the mouth.

### TO CATCH SYRINGED WATER WHEN THE DAM IS ON.

Frequently two sponges act better than one; one being placed on the labial, and the other on the lingual side of the tooth.

### THE FORMALDEHYDE GAS-GENERATING LAMP—TO OVERCOME A DIFFICULTY.

This difficulty consists in supplying the tank with gasoline every night, necessitating that much work and waste of gasoline. To avoid this, I simply screw up the wick until about four inches of it is exposed to view, the which I dip into a bottle of gasoline, leaving it to soak for the half-minute during which I am placing the instruments in the chamber, then turning it down again. This burns just long enough to convert into gas the small quantity of formaldehyde used. The dry and penetrating nature of gas adapts it for disinfecting many things which would be injured by boiling, or even by immersion in a liquid, such asc the rubber duct of the saliva ejector, the sponges, the hair-brush, the hand-piece, the absorbent cotton and the rubber-dam holders.

## PRACTICAL HINTS.

BY DR. C. L. DAVIS, RICHMOND, IND.

### HOW TO MAKE AN UPPER PLATE STAY IN ANY MOUTH.

In making the plate, take a suitable instrument and make a sharp groove in the model all the way around the edge on the inside of the gum line and across the back of the plate. This raised ridge on the plate, when vulcanized, will make the denture stick so tightly in the mouth that the patient can hardly remove it.

### TO OVERCOME A TENDENCY TO GAGGING WHEN INSERTING A DENTURE.

Dipping the plate into strong vinegar before inserting it in the patient's mouth will prevent any ordinary case of gagging. In extreme cases, bathe the roof of the mouth with a menthol solution applied on a pledget of cotton.

### TO REMOVE TIN FOIL EASILY FROM A VULCANITE PLATE.

Before flasking the case, soap the model, and when vulcanized the tin-foil can be stripped from the vulcanite with ease.

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## A CASE IN PRACTICE.

BY HARRY E. CRADDOCK, D. D. S., MONTPELIER, OHIO.

Patient presented himself with inlocked superior left cuspid which had been ground off and crowned with gold with an effort to have the tooth appear in the arch, but as tooth had been ground off short to make room for occlusion and from faulty fit, etc., the crown would not stay cemented on. It also looked very little if any better than as if tooth had never been touched, and patient wanted it fixed. I tried to have him consent to have cuspid drawn into place (which could have been done very easily) and then crowned, but this he positively refused to do. He wanted it crowned and crowned with gold right where it was, so while I was doing some other work for him I studied the case for some way out, and finally decided to try the following:

I first devitalized the tooth and removed the pulp, filled canal in usual way, then ground the tooth down more to give plenty of room, then made cap for stump the same as for Richmond crown with good long iridio-platinum post. I then slipped this into place and took a bite and impression and dismissed patient. I now secured a model and mounted on the articulator, then selected a vulcanite cuspid the right size and shape and with fusible metal secured a die and counter die of tooth and swaged tooth of 30-gauge 22k. gold plate and filled this level full with 18k. solder. I now fitted this to model, bringing it out so it was in the arch and occluded properly, letting it extend up against the gum the same as for a bridge dummy, and invested. After investment hardened and wax was removed, I filled in small space between cap and dummy with scrap gold and finished with 18k. solder (should have preferred to have dummy of porcelain but patient preferred gold). It made a very neat job and looked as natural as any gold tooth could, stayed cemented all right and made a very happy patient.

## A USEFUL HINT.

BY G. R. GARD, D. D. S., ORD, NEB.

I have experimented with several root-canal drills for removing root fillings, but the one that presents itself to me as the most simple and effective is, to take the butt of an old screw-mandrel and in the hole set an old Donaldson or Downie broach—the latter preferred—with sealing wax. Should the Donaldson broach be used it may be ground wedge-shape on the end, which will make it cut faster. These drills will follow the most tortuous canals. They are good, cheap, and effective.

## A CLINICAL CASE—THE UNTOWARD EFFECTS OF A DENTAL OPERATION.

BY DR. EDWARD H. BOWNE, KINGSTON, NEW JERSEY.

The strange case in the dental practice of Dr. Edward A. Crostie, of New York City, published in the August number of THE DENTAL SUMMARY is the sole reason for writing up this old-time case in my practice of upwards of twenty years ago, also to show that very abnormal lesions sometimes follow the very ordinary operation of the extraction of teeth and other dental operations, apparently quite remote from the original oral lesion, and operation, proving untoward complications sometimes develop from very remote causes of a very remarkable character.

In March, 1882, I extracted during several operations twenty-seven teeth from the mouth of Miss Mary Oppie, of Bridge Point, Somerset County, N. J. Quite evidently the process had been destroyed in the young woman's mouth by severe mercurial salivation, the fetor from the patient's mouth was almost intolerable, and from around the gums exuded a foul-smelling pus.

Although a well-to-do farmer's daughter, Miss Oppie, who was about twenty-nine years of age, had a poorly nourished body, and her general health was far below normal.

At the fourth and last operation I extracted the remaining seven teeth in the upper jaw. When I attempted to disarticulate and extract the second upper molar I discovered that the third molar (wisdom tooth) was firmly attached to the second molar, requiring the use of the lancet to cut away the soft parts, and the teeth were removed without much shock or discomfort to the woman. The cavity made in the upper jaw certainly looked formidable enough, as the two teeth were connected together in their sockets, by the entire corner of the maxilla. The hemorrhage following the removal of the two teeth and necrosed bone was soon under control, and I ordered a wash of honey, sage and alum for the mouth to be used *ad libitum,* and muriate tincture of iron in six-drop doses, taken in water thrice daily, as the lady had been always subject to acute attacks of erysipelas without much warning except slight febrile disturbance.

Here I must record the *remarkable after-effects,* following the operation. By or before thirty-six hours, the body of the young woman, particularly the thighs and lower limbs, were covered with mighty blisters, many of them as large as a walnut; all contained a serous fluid, like water—but comparatively painless. Before the end of four days the blisters all disappeared. The formidable wound in the mouth, thanks to the mouth-wash and tincture of iron, healed by first intention, although the external face, and even the neck of the woman on the side of the operation, were discolored badly, literally "black and blue," so-called—the discoloration not disappearing for nearly two weeks. The lady made a complete recovery without other untoward symptoms, and several months later I adjusted an upper and lower denture to her mouth, with complete comfort and satisfaction to the lady. The two molars encased in the necrosed bone were sent to the museum of the Baltimore College of Dental Surgery. In a fair country practice of nearly thirty-five years I have never had a case similar to the above, nor read of such a case in the text-books or periodical literature of the profession or general surgery.

# BENEFITS OF DENTAL SOCIETIES.

BY W. A. BARBER, D. D. S., SPRINGFIELD, OHIO.

The dental society, as an aid to growth, stands first and foremost. That this is the case, it seems to me, no argument is needed to prove. We have only to look about us for notable men in our profession to find prominent workers in dental societies. They may not have begun society or association work early in their professional lives, but sooner or later the need of the friction, drill, whip and spur of mind in contact with mind was felt so constantly and forcefully that they as naturally drifted to the society as the waters of enlarging rivers flow toward and into the ocean.

When once enrolled as members new growth began. They became conscious then, if not before, that others knew something. Perhaps they were surprised into belief that some others knew quite as much or even a little more, than themselves. The elevation on which they stood, and fancied it a towering peak, began to seem like a morain in a depressed valley; and to find associates they must scramble out of the plain and up toward real heights.

The coming in contact with men and women of high character and skill is of inestimable value.

When it is remembered that the occupation of the dentist necessarily confines him exclusively to his office during business hours, where he comes in contact with a limited number of people, it can readily be understood how such a life must shut off the broadening influence which contact with numerous people gives in most other occupations. We scarcely see any other individual except the patients under our immediate care, and with these the important duty of serving each patient properly, combined with pain inflicted in so doing, makes our intercourse with them anything but pleasurable. And for many reasons it is especially important that the dentist should devise ways of having more social intercourse with his fellow-man and especially with his fellow-practitioners.

Where this sociability exists it makes its impress on each individual. Dental societies, aside from their educational advantages, do much to give good feeling and to broaden the character of its members. Association stimulates ambition, developes the intellect and makes one more companionable. This is true of the professional as of the social side of life. Man is a social being, he has advanced under social conditions and there is in the professional as well as in the mental and moral life profounder reasons for association as a means of education and professional growth than there are for mere material ends, and the time has come when we cannot afford even in a pecuniary sense to ignore associations.

There is a communication of mind with mind in which probably all who associate with one another participate, however unconsciously. There is not an individual, however humble, that does not have some influence and when we put our minds in concord with others, when our hearts vibrate in harmony with them, how much we can do for the benefit of each other.

Association gives a man greater power for growth. The growing man learns something from everything he sees or comes in contact with. Nothing can touch him that does not teach him. The power to grow is fed by nothing so much as keeping the mind open to every possible suggestion from every possible source.

To surrender ones self to the education of life is to receive and give in the largest measure.

Progress is the eternal law of nature and in this progressive age, with the rapid strides our profession is taking, it is necessary for us to keep wide awake and use every energy at our command in order to keep in touch with it. It takes a better dentist to make a financial success now than it did ten years ago, and ten years hence the man who sticks to methods now in vogue will find himself more of a back number than the laggards of to-day.

The dental society largely contributes to the fraternal intercourse and good fellowship of its members, the interchanging of ideas through papers, discussions and at our State meetings clinics increase our knowledge and is a well-recognized avenue through which the standard of our progress is brought to a higher plane to not only the members but to the world at large. Here it is that men of brains and genius professionally show their light, and what is their knowledge belongs to all of its members. It will be found that the leaders in any profession are leaders in association for the advancement of their chosen profession, be what it may.

The ministers have their association, lawyers theirs, in fact all callings in life have their societies. He who scorns association necessarily places himself beyond the reach of progress; he will get into a rut and probabilities are he will stay there. We may be hiding away some golden thought that if brought forward into the light of controversy would prove to be of inestimable value.

The dental society has always exercised a helpful influence upon young and inexperienced practitioners, restraining characteristic impulses, cultivating and developing love of order and decent living. So that in a measure they become a necessity to localities, a means of protection, as well as a source of professional profit. If we find a town or a section with no society we may expect to find jealousies, envy, slander and all manner of bitterness, but all this has been known to clear away like smoke before the wind by the formation of a society.

Dentistry in America to-day leads the world, because American dentists have been teachers. Of what man in our ranks can it be said that he holds his knowledge, his skill, as men do secrets of trade? Is it not rather the fact that nothing brings greater joy to the clever and skillful among us than to have a message or method to give to his brother practitioners? Secrets and secret-mongers are despised among society men. Sixty years ago it was not an uncommon thing for those entering a dental office as assistants to be compelled to take an oath never to reveal the secrets imparted.

A little flight of time, not the span of a man's life, and quackery and commercial spirit give place to that broader spirit of humanity and liberality, which must always be the guiding principle of that which claims a place among the learned professions.

Who but Horace H. Hayden was the man strong enough to set this example for that which we now believe to be right?

Is not Carlyle again proved true in saying, "the history of a nation is found in the biographies of her great men."

That premature decay of the teeth is a result of civilization is an undeniable fact; and in those whose constitutions are depleted of the force the teeth are rarely good and they are only kept in fair working order by the great science of modern dentistry. Dentists are the barometers of civilization; their rise and prosperity is one of the most instructive facts in modern sociology. American dentists are the best because American teeth are the poorest in the world. Had the lives of pioneer inventors and scientists in dentistry been measured by a century thrice told, their best efforts singly exerted for that time, would have failed to produce results that by and through combined energy and society methods have been realized in a little more than a fourth of a century. Then does not the young dentist owe a debt that he is in honor bound to pay to the cause of science and progress?

Libraries, laboratories, colleges, post-graduate schools and curricula of technical courses abound, that but for those pioneers and for their society efforts would not to-day have an existence.

Who knows? Who dares say that labor is lost, that a single thought shall perish?

Man is chiefly notable and distinguished not so much on account of what he is, as on account of what he is a capable of doing, and in no one profession do we find this truth so fully demonstrated. Life has but one meaning and that is growth. Growth is the product of one force and that is association. The growth of man means the unfolding and enlargement of his powers and capabilities. The hidden and higher progress by which his growth is accomplished lie on the side of mystery, but the human means by which his growth is fostered and promoted are of his own making and constitute his chief glory. In the constitution of the natural world there is everywhere the adaptation of this supreme end, "the growth of man," and no one force is as great a factor toward this end as association.

Let us catch an inspiration from the lives of the great who have gone before and finally let us not forget "the assembling of ourselves together." Where the good old-fashioned brotherly love is trained and cultivated into professional spirit.

# SUGGESTIONS

## WAX STICKS FOR WAXING UP.

**O. E. Hanford, Hardwick, Vt.**

Get three or four glass tubes such as druggists use, about ½ inch in diameter, outside. Save your old base-plate wax and melt. Just before pouring wax, blow through the tube, the moisture will prevent it from sticking. Cork one end and pour. Set aside to cool, and when perfectly hard you can pull out a nice wax stick as smooth as though it had been turned.

## SPUR-ANCHOR FOR ONE END OF A DENTAL BRIDGE.

**S. S. Stowell, Pittsfield, Mass.**

A large gold filling is placed in the posterior proximal surface of a tooth—a canine, for example; a large dovetail or box anchorage is made for the filling in the thick palatal shoulder of the tooth, and all other anchorage grooves are made deeper and stronger than usual. The margins of the filling are brought well out from between and away from possible contact with the bridge. In the surface of this filling a hole is drilled on a line longitudinally with the tooth, to the depth of one-sixteenth of an inch. In shaping the cavity and in inserting the filling, this hole should be kept well in mind, as it must not go through the filling to the dentin at any point. Into this hole a platino-iridium or clasp gold wire is loosely fitted, No. 14 or 16 gauge. A disk of 24k. gold, No. 30 gauge, is burnished to fit the surface of the filling, perforated to receive the wire, which is next attached, with 22k. solder. The disk is then put back in place, and again burnished and trimmed, as it must not overlap or come in contact with the enamel at any point.

The bridge is now constructed in the usual manner, by crowning some posterior tooth with a gold cap. An impression is made, on which the disk and crown will appear in position as in the mouth, and in soldering the disk and spur will become part of the bridge. When finished the bridge should be connected only to the posterior tooth, the spur being left as a loose socket to support the anterior end and to permit vibration when in use. Models of practical cases were shown that had been in use from five to fifteen years.—*Cosmos.*

## AN AID IN PRESERVING PEROXIDE SOLUTIONS.

It is said that the admixture of an equal quantity of Listerine with peroxide of hydrogen proves effective in maintaining the stability of the peroxide a much greater length of time than would otherwise obtain; and that mouth-washes of alkaline reaction should never be used in combination with peroxide, the alkalinity not only altering its chemical, but to a great extent destroying its antiseptic effect. At best, alkalies simply temporarily neutralize acidity, whereas, a true antiseptic overcomes the conditions to which the acid-forming ferment is due.

## MODELLING COMPOUND AND WAX.

**C. H. Gerrish, Exeter, N. H.**

After you have used a piece of old modelling compound for about twenty years it will take a better, sharper impression than anything I know of. This was my idea of it until I went to make a set of teeth for myself. I looked at that old piece of modelling compound, and I said to myself, can you put that in your mouth? I decided I could not, so I got a new piece for my own mouth, and since then I have not put in my patient's mouth what I would not put in my own. And that is a good golden rule for the dental office: Never put in your patient's mouth anything you would not put in your own.—*Cosmos.*

## DIAGNOSIS OF PULP SENSITIVITY.

**J. W. Beach, Buffalo.**

Heat a broad-faced amalgam instrument, take upon it a piece of gutta-percha, high grade preferred on account of its ability to retain the heat, hold it in the flame until nearly ready to burn, then touch the tooth, gently at first, and you will immediately determine the relative sensitivity of the pulps of the different teeth. If pulpitis is present, the pain will not immediately subside upon the removal of the hot gutta-percha. —*Forum.*

## OBTUNDENT FOR SENSITIVE DENTIN.

Continuously we hear about new local obtundents for the painless excavation of hypersensitive dentin. Here is a combination of drugs that is second to none: Melt together in a test-tube equal parts of menthol and cocain hydrochlorate and add to it an equal amount of liquid carbolic acid. Keep in well-stoppered colored bottles. Before applying the heated solution to the dentin the cavity should be washed with a warmed alkaline solution, to neutralize any acids present, and dried with alcohol and the hot-air blast. This mixture also is of marked benefit in reducing the pain in fitting bands and in removing deep-seated calcareous deposits from roots in the treatment of pyorrhea.—*Era.*

## CUTTING A BAND FOR SHELL CROWNS.

**A. S. Wolff, St. Louis.**

No doubt you have all noticed at some time or other a solder line showing on the buccal aspect of bicuspid and molar shell crowns. A decidedly more artistic way to make them is to cut the band in such a manner so that when contoured the solder line will be entirely on the occlusal surface. This may be accomplished by so cutting the gold that the tips of the cusps will be on the band instead of on the carved part. This is a simple point, but one that is to be regarded, I believe, as very valuable.—*Extract Dental Era.*

# EDITORIAL

## THE EYES.

No body of men need to give more careful consideration to the eyesight than dentists, and yet how indifferent the majority are with reference to this important matter.

No man can become a skillful dentist, unless his eyesight is good or can be made good with the aid of glasses.

In an excellent article on this subject, published in this issue, Dr. C. R. Butler states many a truth and calls attention to the advisability of testing the eyes of those contemplating the study of dentistry, not only the state of vision, but to test the eyes for the distinguishing of colors, the same as railroadmen's eyes are tested.

This we believe an important suggestion, and brings to mind what we have spoken of before: the necessity of training students in their technic work in the matching of teeth, selection of colors, etc. This is especially necessary now that so much porcelain inlay work is being done and the matching of shades is of such vital importance.

But the general care of the eyes is a subject no dentist can afford to ignore. The custom of many dentists, of working nights, can but become injurious through eye-strain even though its effects may not soon be made apparent.

The eyes need resting spells, the same as any other bodily organ, and he who neglects to give them rest will eventually feel the effects of overuse, if not permanent injury.

## THE INSTITUTE OF DENTAL PEDAGOGICS.

The next meeting of the Pedagogic Association will be held in Buffalo, N. Y., December 28th, 29th, 30th, 1903, and promises to be the most profitable meeting yet held. Dr. W. H. Whitslar, chairman, and other members of the Executive Committee have worked hard and zealously to furnish an excellent program and in consequence have succeeded in securing material of special value to every dental teacher.

Of all the associations, that of the Pedagogues is by far the most instructive and valuable. No dental college teacher can afford to miss it, and yet there are many apparently indifferent as to attending.

Teachers must be progressive to do the most efficient work in college, and it is here, at these meetings, that one gets new and advanced ideas from others, and benefits others by unfolding the methods of his own.

It is hoped that colleges will send larger delegations to these meetings, for their importance warrants a full attendance, and the program prepared ought to be enough to satisfy any one of the value of the coming meeting.

## A WORD WITH OUR READERS.

Ere another issue of The Dental Summary it will have entered upon a new year of its existence, with every promise of even a more successful one than that just passed, although the past year has been the most successful in the history of this dental journal.

The quality of material presented has been unsurpassed by any dental publication, and that promised for 1904 will fully equal if not surpass the good things of 1903. Our subscribers have a great treat before them and from the kind words of appreciation in the past we know they will appreciate what is to come.

Our aim is to make The Dental Summary an invaluable journal to every dentist, and the hundreds of commendatory letters received the past year indicate that the good things we present are more than acceptable to the profession.

During 1903, The Dental Summary enjoyed a growth of over 4,000 new subscribers and indications point to at least a corresponding increase during 1904.

If high grade, thoroughly practical articles are what the dentist wants, methods that can be incorporated into the daily practice of every dentist, then he should be a subscriber for The Summary.

Those who have already taken it know of its value and will continue to derive benefit from its teachings, but those who have not been subscribers cannot realize what a fund of useful information they have missed.

It will be appreciated if our present readers will tell their dentist friends of the excellence of The Summary that they, too, may become subscribers and receive the great benefits derived from its perusal.

We wish, at this time, to thank especially all those who have contributed to the pages of The Summary during the year just passing, and to all those who have sent expressions of appreciation of the excellent quality of the material furnished. And, in closing, we desire to extend to all readers, our compliments of the season and wish them many happy returns during the coming new year.

# NEW PUBLICATIONS

Principles and Practice of Crowning Teeth. By Hart J. Goslee, D. D. S., Chicago, Ill., Professor of Prosthetic Dentistry and Crown and Bridge-work, Chicago College of Dental Surgery, Dental Surgeon of Cook County Hospital, member of National, State and other Associations. Adopted by the National Association of Dental Faculties as a College Text-book. New York: The Consolidated Dental Mfg. Co., Pub., 1903.

Notable among the many excellent dental books which have been contributed to the dental profession appears the work entitled "Principles and Practice of Crowning Teeth," of which Dr. Hart J. Goslee is the author.

A work which may be compared in the good which it is destined to accomplish, and not suffer by the comparison, to the invaluable books, "Orthodontia," by Dr. Angle, and the "Principles and Practice of Filling Teeth," by Dr. Johnson, which, it may fittingly be said, occupy the most eminent position in the respective fields to which they are devoted.

Perhaps no department in dental science has witnessed a more rapid revolution in methods and improvements than has crown-work, until the average practitioner has virtually been distanced in his efforts to keep apace with the numerous improvements and the various and widely different methods of procedure, that have continually been presented and advocated. For this reason we may truthfully say that the author has come to the rescue, and from the somewhat chaotic condition he found it, has placed it upon a sound, systematic and practical basis, and raised its standard to the dignified position it rightfully demands, a distinct speciality in the department of prosthetics.

The author has covered the entire subject in a comparatively small volume of 292 pages, which, by the way, is a notable fact of all the best books of late issue, namely, compactness, briefness, concise and to the point; yet clear and comprehensive, which is indeed a refreshing departure from the too often voluminous, description and illusidation of principle and text, that have confounded and entangled the mind of the reader of similar works on similar subjects, in which we have been compelled to peruse page after page in order to gain one little sentence of real practical information.

The book of necessity treats for the most part on technical and mechanical procedure, yet the artistic and esthetic considerations are always given first attention, and we are pleased to observe dominate at all times in his discrimination among many methods; thus appealing to the finer senses of culture and refinement, in which we find a true stimulant to our artistic endeavors, and through the practice and manifestation of which lies our greatest hope of securing recognition not as mere artisans, but as a learned body following a scientific pursuit, that will endure time, as an acknowledged profession.

In selecting particular methods of procedure or some special method as best suited to some special case, it would obviously be hard for an author, or any one else for all that, to entirely eliminate personal equations and not be unconsciously governed by his own individuality in such selection, and perhaps be intuitively influenced toward the method which, owing to his own peculiar ability, he can best execute, and which method in the judgment of another, gifted differently, might be considered inferior, and truly speaking such might be the case, considering the matter in the light that success and permanency in dental operations are successful in proportion as they are successfully performed and skillfully executed. Yet it is equally as true that if the operator would only develop himself and acquire the manipulative ability and knowledge sufficiently to employ the acceptedly better method he would in that measure be able to render better service to his patient.

In this regard, in the opinion of the writer, the author has exercised rare judgment in giving certain methods first place and relegating to the rear methods that are for many reasons inferior.

That the author has achieved the worthy ends he had in view, ostentatiously, to give to the profession a practical reference book, as well as to fulfil the needs of his majesty, the student, is eminently manifest throughout the entire work, which augers for success and stamps it as a work which will undoubtedly obtain to the popularity that its merits deserve, and win for itself a welcome place among the standard text-books of our dental curriculum.

That the book is beautifully written, adequately and profusely illustrated and handsomely bound and altogether should rightfully demand the admiration of the most critical is a compliment which only meagrely expresses the credit due to both author and publisher.

We regret that the author confined himself to only incidental reference to bridge-work, a branch of prosthetics which is so intimately related to the practice of crowning teeth, and we sincerely hope that at some future time Dr. Goslee will take up the work at this point, where, as we might say, he has left off; and treat the two subjects in their co-relation, under the allied subject of crown and bridge-work.—Alden Bush.

LECTURES ON ORAL SURGERY. By Thos. L. Gilmer, M. D., D. D. S., Professor of Oral Surgery, Northwestern Dental School, Chicago. Published by the author, October, 1903.

We have received a copy of this valuable work and although gotten up and published for the use of students of the University school, we cannot refrain from making notice of it in these columns.

The book contains twenty-five lectures, concisely written, covering well the field of oral surgery. The author, unlike most writers, has stuck to his text throughout and the subject matter is confined to the special branch under consideration. The first lecture deals with surgical bacteriology; the second, third and fourth are confined to inflammation, its classification and treatment; suppuration, necrosis, and caries of bones receive due consideration. Then wounds and their treatment; diseases of the maxillary sinus; resection of roots for the cure of persistent alveolar abscess; surgical interference for the cure of facial neuralgia; tumors; fracture of the maxilla, malposed teeth; replantation; transplantation; implantation; cleft palate and harelip; odontomes, and affections of the lips, tongue and mouth make up the balance of the subject matter treated.

The author is to be congratulated upon the results of his undertaking. Concisely written but not too brief; exhaustive but not lengthy; and text confined to the subject under consideration, make the work an especially desirable one. Had we more text-books of this sort, students would receive much more precise instruction than they can from many of the voluminous text-books that treat exhaustively of almost everything but the subject under consideration.

# CORRESPONDENCE

## WHAT CAUSED THIS TROUBLE?

C. W. BARNEY, PT. WASHINGTON, WIS.

Miss A, aged 20, Norwegian parentage, called on me February 16, 1903. I found the mouth perfectly healthy, except two small cavities, one in right upper central incisor, the other in right upper second bicuspid. I filled the cavity in the incisor with gold, the bicuspid with Twentieth Century Alloy. In ten days she returned and complained of violent pain in the bicuspid. I removed filling and devitalized pulp, replaced filling and had no further trouble. I asked about the gold filling and she said it hurt a little for a few days but is all right now. In 60 days she returned a second time with the central badly abscessed and 60 days treatment with Oxpara has failed to put the tooth in a perfectly comfortable condition. There is no visible irritation but she complains of it being sore at times for a few hours, then it is all right again for several days. The cavities were normally sensitive at the time they were filled and the patient is the picture of health.

What caused the trouble?

# SOCIETY

## INSTITUTE OF DENTAL PEDAGOGICS.

Program of the meeting to be held in Buffalo, December 28th, 29th, 30th, at the Iroquois Hotel. All interested in education and the elevation of the standards of the dental colleges are very earnestly requested to be present at this meeting.

President's Address—"Some Faults of the Prevailing Dental Training," Dr. J. D. Patterson, Kansas City. Discussion to be opened by Dr. John I. Hart, New York; Dr. B. Holly Smith, Baltimore; Dr. H. P. Carlton, San Francisco; Dr. George E. Hunt, Indianapolis; Dr. R. H. Hofheinz, Rochester.

2. Prosthesis—Two papers. First, "Methods of Teaching the Artistic Elements of Prosthetic Dentistry," Dr. A. O. Hunt, Omaha, Neb. Second, "Methods of Teaching the Anatomical Arrangement of Teeth," Dr. B. J. Cigrand, Chicago. Discussion to be opened by Dr. N. S. Hoff, Ann Arbor; Dr. G. H. Wilson, Cleveland; Dr. R. R. Freeman, Nashville; Dr. F. H. Berry, Milwaukee.

3. "An Ideal in Pathology," paper by Dr. D. R. Stubblefield, Nashville. Discussion to be opened by Dr. H. A. Smith, Cincinnati; Dr. T. B. Hartzell, Minneapolis; Dr. A. H. Peck, Chicago; Dr. O. L. Hertig, Pittsburg.

4. "Orthodontia Technology"—Two papers, by Dr. S. H. Guilford, Philadelphia, and Dr. S. C. Case, Chicago. Discussion will be opened by Dr. W. E. Grant, Louisville; Dr. A. E. Webster, Toronto; Dr. H. B. Pullen, Buffalo; Dr. H. T. Smith, Cincinnati.

5. "The Value of Instruction in Dental History and Literature," paper by Dr. H. L. Ambler, Cleveland. Discussion to be opened by Dr. Charles McManus, Hartford; Dr. J. H. Kennerly, St. Louis; Dr. B. J. Cigrand, Chicago.

6. "Porcelain Technology," paper by Dr. H. J. Goslee. Discussion to be opened by Dr. J. Q. Byram, Indianapolis; Dr. Ambler Tees, Philadelphia; Dr. L. E. Custer, Dayton; Dr. H. L. Banshaf, Milwaukee; Dr. J. F. Ross, Toronto.

7. "The Dental Curriculum," paper by Dr. George E. Hunt, Indianapolis. Discussion to be opened by Dr. G. V. Black, Chicago; Dr. J. B. Willmott, Toronto.

8. "How Shall Quizzes Be Conducted?"—Symposium by Dr. F. D. Weisse, New York; Dr. R. H. Nones, Philadelphia; Dr. L. P. Bethel, Columbus.

9. Exhibition of recent teaching appliances, including books and charts, Dr. W. G. Foster, Baltimore; Dr. L. S. Tenny, Chicago.

10. Report of Master of Exhibits, Dr. Ellison Hillyer, Brooklyn.

11. Banquet, Wednesday evening.

# AFTERMATH

## PERSONAL AND MISCELLANY.

**Fire in Dental Office.**—At Utica, N. Y., Dr. Tremain suffered a loss by fire October 21st.

**Married.**—Dr. E. C. Crawford, Chicago, Ill., and Mrs. Elnora Rounds, Oshkosh, Wis., are married.

**Married.**—Dr. E. C. Burkholder, Chicago, and Miss Effie Tyner, East St. Louis, were married October 27th.

**Sudden Death.**—Dr. R. D. O'dNeill, Pittsburg, Pa., died suddenly in his office October 26th. He was unmarried.

**Married.**—Dr. W. S. Hart, Unionville, Conn., was married October 29th, to Miss Lena M. Cowles, Glastonbury, Mass.

**Dental Office Thieves** entered the office of Dr. A. S. Condit, Mt. Vernon, Ohio, and stole instruments and materials worth over $100. No clue.

**Dentist Dead.**—Dr. H. B. Weagant, Morrisburg, Ont., died October 26th, after a short illness. He was one of the pioneer dentists of Eastern Ontario.

**Pioneer Dentist Dead.**—Dr. Asa A. Howland, one of the oldest and best known dentists in Central Massachusetts, died October 22nd, at the age of eighty three.

**Chance for a Fortune.**—The dentist who could invent a way to let a woman go on talking while he is drilling her teeth would make ten thousand fortunes.—Ex.

**Dental Office Burns.**—The dental office of Drs. J. W. and D. C. Shaw, Springfield, Mass., was totally consumed by fire October 31. Loss about $2,500. Fully insured.

**After Unlicensed Dentists.**—Both the California and Washington State Examining Boards are after the unregistered practitioners in the two States and are making many arrests.

**Loss by Fire.**—Dr. H. C. Hopkins, Lithonia, Ga., suffered a loss of $4,000 by fire October 28th. Insurance $2,800. The doctor, his wife, and three children barely escaped with their lives.

**Accused of Plot to Kill Dentist.**—Paul Brenner, just out of Elmira Reformatory, and Nathay Young, have been arrested in New York for plotting to kill Dr. B. B. Brandeis, a dentist in New York City.

**Robbed in a Dental Office.**—While having dental work done in Boston, Miss Ephie MacEachen suffered the loss of a pocket-book snatched by some intruder from a stand near the dentist's operating chair.

**Prominent Dentist Dead.**—Dr. M. L. Jackson, Oskaloosa, Iowa, died November 9th, of heart disease. He was a prominent dentist and one of the most public spirited men Oskaloosa ever claimed as a citizen.

**Dental Office Flooded With Water.**—The fountain cuspidor in the office of Dr. T. D. Phillips, Everett, Wash., in some way became clogged and the water that ran during the night flooded the rooms, causing great damage.

**Dentist Sentenced to Penitentiary.**—Dr. F. Van Waters, a former dentist of Stillwater, Minn., who removed to Seattle, Wash., a few years ago, has been given a term of twenty-five years in prison for taking improper liberties with little girls.

**Only a Dream.**—We had a dream the other night,
When everything was still;
We dreamed that each subscriber
Came right up and paid his bill.—Ex.

**Southern Illinois Dental Association Officers Are:** J. K. Conroy, president, Belleville; W. G. Carney, vice-president, East St. Louis; H. K. Harnet, secretary, Upper Alton. Executive committee—E. L. Burroughs, Edwardsville; L. K. Kraft, Collinsville; G. W. Entsminger, Carondelet.

**Golden Anniversary Celebration.**—The dental profession of Philadelphia will celebrate February 21st the fiftieth anniversary of the graduation of the class of 1854 of the old Philadelphia College of Dental Surgery, by a banquet to the surviving members of the class, Drs. Louis Jack, James Truman, C. N. Pierce and W. Storer How.

**Would Have Dental Examiners Paid $10 Per Day.**—Dr. W. W. Diffenderfer, secretary to the Board of Dental Examiners, District of Columbia, has written to the Commissioners asking them to include in their estimates to Congress an item providing for compensation of $10 for each meeting attended by the members of that board.

**Lost His Money.**—Dr. M. E. Lowney, a Chicago dentist, has reported to the police the loss of $400, which recently disappeared while the dentist was seeing the night side of Minneapolis. Lowney was locked up for drunkenness some time ago, but had the money at that time. He does not know whether he spent it, lost it or it was stolen.

**Northwestern Dental Association Officers.**—President, Henry McManus, Hartford; vice-presidents, Thomas J. Barrett, Worcester, and Thomas Mound, Rutland, Vt.; secretary, Edgar O. Kinsman, Cambridge; assistant secretary, Charles F. Kreppee, Forest Hills; treasurer, Edward B. Griffin, Bridgeport; librarian, Charles H. Riggs, Hartford; editor, David W. Johnstone, New Haven.

**Dr. C. H. Thayer Dead.**—Dr. C. H. Thayer, who has practiced in Chicago since 1870, died in that city November 4th. In the Civil war he was Captain of Company B, First Rhode Island Cavalry. He served continuously from the first battle of Bull Run until the close of the war. He was wounded and captured at the battle of Kelly's Ford and was a prisoner at Libby prison for several months.

**French Dental Society.**—A new dental society, whose membership will be drawn from French Canadian dentists, has been formed under the name of the Odontological Society of the Province of Quebec. Its officers are: President, Dr. J. Nolin; first vice-president, Dr. L. N. Lemieux, Quebec; second vice-president, Dr. J. G. Gendron; secretary-treasurer, Dr. G. H. Kent; corresponding secretary, Dr. E. Dubeau.

**Wants $5,000 for Six Years' Toothache.**—The pulling of a tooth is the basis of a suit for $5,000 damages commenced in the Superior court, October 26th, by Miss Emma Pike, Chicago, against the Chicago College of Dental Surgery. Miss Pike avers that six years ago, because of the negligence of the operator, an instrument broke in her tooth. For years she suffered pain, she declares, then a dentist found a piece of steel in the tooth.

**Had Tooth Extracted in Order to Swindle.**—A man giving his name as Patterson, entered Dr. Parker's dental office in Brooklyn and requested the extraction of a tooth, and examination of his other teeth with a view of having the dental work performed at another time. He desired to pay in advance and gave the dentist a check for $25. The unsuspecting dentist gave the patient $18 in change, only to find that the check was a forgery.

**Thefts.**—Dr. Barrett, Hartford, Conn., suffered a loss of $50, by thief who entered the office while the doctor was busy in another room. The office of F. C. Hopkins, Alton, Ill., was entered at noon, October 28th, by a sneak-thief who stole $30 worth of materials. Several Greensburg, Pa., dentists have recently suffered loss by thieves. Numerous other thefts are reported from different parts of the country. Dentists should lock their offices when leaving.

**Dental Office Robbed.**—While Dr. W. H. Barton was at lunch November 11th, his dental office, Akron, O., was robbed of a quantity of gold scrap and other valuables. Patients arrived and found a young man in the office. He cheerfully arose and offered his chair to one of the ladies stating that the Doctor would be back in about ten minutes, then he left. The patients describe him as a young man about thirty or forty years of age, about five feet nine in height, light mustache, dark gray clothes, stiff hat, light overcoat.

**Pereferred Death to Insanity.**—Dr. W. E. Light, Saginaw, Mich., committed suicide November 8th, after having shot his wife and eighteen-year-old daughter. He left letters in which he confessed the intended crime and asked that no inquest or postmorten be held and that the bodies be not taken from the house until the funeral, threatening insanity to those who acted contrary to his wishes. He stated in the letter that he felt insanity coming on and that he dreaded being shut up and leaving his loved ones unprotected.

**Sad Death.**—Dr. J. A. Montgomery, Douglas, Ga., died October 28th, from typhoid fever. He was to have been married to Miss Ethel Frink, September 30th, but was taken sick a few days before that time. The marriage ceremony was performed, however, at the bedside during his illness. His young wife began nursing and caring for him as only a wife can, but in spite of all efforts to save his life he died. Dr. Montgomery was a well-known and popular young dentist and the sad death is keenly felt among his dental friends.

**Ordered Woman's Teeth Extracted.**—Cruelty to charity patients in Missouri State institutions was disclosed November 7th, at the annual conference of the Missouri Conference of Charities and Corrections, by Professor C. A. Elwood, of Columbia, Mo., who has been investigating the almshouses of the State. Professor Elwood recited one instance of a woman patient in the insane ward of one of the almshouses who had bitten the superintendent one day while in a paroxysm. The superintendent, he said, had thereupon ordered all the woman's teeth extracted, and this was done. An investigation will probably result.

**Suit Against Dentist Dismissed.**—In the United States Circuit Court, November 3rd, the damage suit of Mrs. Maud Elizabeth Grau against Ellis Boston was dismissed on the motion of the plaintiff, the defendant paying the costs. The suit was brought against Boston, who is a dentist at Carthage, Hancock County, by Mrs. Grau, who is a resident of the State of Ohio, to recover damages for alleged malpractice. She asserts in her declaration that she went to Boston to have the nerve remove from a "raging tooth," and that in attempting to take the nerve out of the tooth the dentist left a piece of steel in the tooth which caused ulceration and general distress.

**A Novel Suit.**—A somewhat novel damage suit was filed in Des Moines recently, in which is a hint of a new danger for dentists. The suit is for damages because a dentist is alleged to have caused consumption in a patient, from which the said patient died. Theodore Frace sues Dr. J. R. Ryan for $5,000 damages, alleging that Dr. Ryan administered an anestheic to Frace's wife while engaged in pulling a tooth, and that by and through the application of this medicine she contracted tuberculosis from which she afterward died. Just how the connection between the two is to be proved to the satisfaction of a jury remains to be brought out on the trial of the case, but the point is a novel one and may lead to a long chain of similar lawsuits.

**Her Own Dentist.**—According to the Indianapolis News, a queer affliction has affected Mrs. Abner Kissiman, a boarding-house keeper of Peru, Ind. For about a year, at periods of from two to four months each, she has become aware of something wrong in the pit of her stomach and the nerves of the organ have acted strangely. A sort of nervous prostration afflicts Mrs. Kissiman every time that these queer attacks overcome her. The nerves of one of her teeth ache simultanously with those of her stomach, and she has become so nervous that her first impulse is to tear out the tooth, and this she does. Within the last year she has pulled out three front teeth that were solid, and obtained instant relief from her stomach trouble. She pulls the teeth out with her fingers, and suffers no pain from the extraction.

**Southern California Dental Association.**—The sixth annual meeting of this Association was held in Los Angeles on September 28th and 29th, 1903. The meeting was devoted mostly to clinics, and it was the largest and best meeting ever held in Southern California. The Association has an active membership of one hundred and seventy, of whom one hundred and thirty were present; forty-three new members joined at this meeting. The following members were elected officers for the ensuing year: President, Lewis E. Ford, Los Angeles; first vice-president, Emma T. Reed, San Diego; second vice-president, P. R. Reynolds, Santa Ana; treasurer, W. H. Spinks, Los Angeles; secretary, Charles M. Benbrook, Los Angeles. The annual meeting in 1904 will be held at San Diego, Cal.—Charles M. Benbrook, secretary.

**Alameda County Dental Society.**—The name of the Oakland Dental Club was changed to the Alameda County Dental Society. The unprecedented success of the monthly meetings of the past two years has inspired the executive committee and the officers to broaden the field of work. Of the forty members many are residing in Alameda, Haywards and Berkeley, and it is the desire to include among the members all ethical dentists practicing in the county. Besides the other interesting features of this year's work, a series of clinics is to be given by members of the Society. A limited number of able practitioners from San Francisco and elsewhere, not members of the Society, will be asked to participate. An evening of eye, ear, nose and throat; an evening of orthodontia, and one devoted to anesthetics, are among the good things promised.

**A New Trial Granted Dentist Burnett.**—Orville Burnett was a Chicago dentist. He loved, and madly loved, Charlotte S. Nichols. The two repaired to a Chicago hotel, and after discussing their prospects, the fact that their love was under a blight and that they didn't have money enough to keep the pot boiling, they swallowed a quantity of cold poison and laid themselves down to die. Burnett was generous and gave the woman more than half the dose. The poison was not sufficient to kill him, but it killed her, and when he woke up he found her lifeless body by his side. This was two years ago, and Orville has been lying around under the sentence of fifteen years in the penitentiary, having been convicted on a charge of murder. Now the supreme court has ordered a new trial, on what ground does not appear. Any man fool enough to induce a woman to kill herself for love of him deserves to go to the penitentiary.

**Charitable Dental Work.**—At a recent meeting of the Northeastern Dental Association, Dr. W. H. Potter, in a paper on "The Care of the Teeth of the Poor," gave in detail a description of the establishment of a free dental service for the sick poor at their homes, by the Harvard school, six years ago. The service, he said, was simply for the relief of pain. Dr. Potter said a special corps of the best students were given bedside clinics, after which they were capable of carrying on the work of the corps. "In some way work of this sort should be extended in its scope," urged the speaker, "so that the sick poor of our city should have the benefit of the skill of dental practitioners. Such service is sadly needed, and dentists can take part in medical charity, and show a willingness to perform gratuitous service to the worthy poor. There should be associations of practitioners outside of dental schools who would agree to give a stated portion of their time during the month or the year to the worthy poor."

**Kansas City Dentists After Illegal Practitioners.**—The licensed dentists of Kansas City are about to start a crusade against dentists and students of the city who are practicing contrary to the laws of Missouri. The first step was taken November 4th at a meeting at the Midland hotel, when the licensed dentists formed an organization to be known as the Kansas City Dental Society of Licensed Practitioners, and appointed a committee which was instructed to urge the county officials to assist the State Dental Board in the prosecution of cases which it may bring before the court. Dr. S. C. A. Rubey, of Clinton, secretary of the State Board of Dental Examiners, and Dr. H. S. Vaughn, representative of Kansas City on the board, were present at the meeting and stated that there were probably forty or fifty illegal practitioners in Kansas City. A committee of ten was appointed as follows: G. P. Greenlee, J. D. Patterson, D. J. McMillen, T. E. Morgan, A. H. Mann, C. C. Clark, F. W. Franklin, W. G. Price, Samuel Loebenstein and G. W. Hillias. Dr. S. C. A. Rubey was elected president and F. W. Franklin secretary of the temporary organization, which will serve until a permanent organization is effected. A committee was appointed to draft a constitution and by-laws and the organization will meet at the Midland hotel on the first Tuesday in December. It was suggested that fund be raised and an attorney employed for this purpose.

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